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**Application for an Exploratory Well
Amoco Canada Petroleum Company Limited
Whaleback Ridge Area**



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Application for an Exploratory Well Amoco Canada Petroleum Company Limited Whaleback Ridge Area

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September 1994

**ENERGY RESOURCES CONSERVATION BOARD
APPLICATION FOR AN EXPLORATORY WELL
AMOCO CANADA PETROLEUM COMPANY LIMITED
WHALEBACK RIDGE AREA**

ERCB Decision D 94-8

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I PRE-HEARING MEETING MEMORANDUM OF DECISION

II INFORMATIONAL LETTER IL 93-9 OIL AND GAS DEVELOPMENTS EASTERN SLOPES (SOUTHERN PORTION)

Amoco Canada Petroleum Company Ltd. (Amoco) has applied, pursuant to section 2,020 of the Oil and Gas Conservation Regulations, to the Energy Resources Conservation Board (the Board) for a licence for a well proposed at a surface location in Lot 9-15-11-2 W346. The well would be known as AMOCO HUNTER CREEK 10-15-11-2 and would be primarily for the purpose of exploring the production potential from the Mississippian System. The well would be located in an area of southwestern Alberta known as the Whiteback Ridge, and more specifically in the valley of Inch Creek (Figures 1 and 2). The Whiteback Ridge area can roughly be described as the area between the Livingstone Range on the west, Highway 22 on the east, Clonary Road and Charlie Creek on the north, and Highway 317/Chama River on the south.

1.2 Interventions

Interventions both in favour and opposed to the application were received by the Board from numerous groups and individuals. Interventions opposing the application documented concerns with potential wildlife impacts, appropriate land use issues, personal, community, and lifestyle impacts, and ecosystem degradation. The safety of the public and Amoco's public consultation program were also significant issues to a number of those who made submissions at the hearing. The general view of those intervenors opposing the development was that no energy developments should be permitted in the Whiteback Ridge area. Those supporting the application generally cited the economic benefits which might accrue from the exploratory well and subsequent field development should the well be successful in identifying hydrocarbon reserves.

1.3 Pre-hearing Meetings and Hearing Schedule

A pre-hearing meeting was convened at the office of the Board in Calgary on 14 December 1993. Its purpose was to receive submissions respecting the scope, venue, and timing of the hearing, as well as requests for advance intervenor hearing. Following this meeting, the Board issued a Memorandum of Decision (Appendix B) dated 31 December 1993. This decision allowed that the hearing of Amoco's application would commence on 25 April 1994 in the Stamped Outcrops Hall. The Board also noted in this decision that the scope of the hearing would largely focus on the proposed exploratory well and its effects, although some flexibility would be allowed for the intervenors to address broader issues. A subsequent request by the Hunter Creek Coalition to delay the start of the hearing by two weeks to allow for adequate preparation of its intervenors was granted, and the hearing was scheduled to commence on 16 May 1994.

Requests for advance hearing were submitted at a meeting on 25 January 1994.

ENERGY RESOURCES CONSERVATION BOARD

Calgary Alberta

**APPLICATION FOR AN EXPLORATORY WELL
AMOCO CANADA PETROLEUM COMPANY LIMITED
WHALEBACK RIDGE AREA
APPLICATION NO. 931598**

Decision D 94-8

1 INTRODUCTION

1.1 Application

Amoco Canada Petroleum Company Ltd. (Amoco) has applied, pursuant to section 2.020 of the Oil and Gas Conservation Regulations, to the Energy Resources Conservation Board (the Board) for a licence for a well proposed at a surface location in Lsd. 9-18-11-2 W5M. The well would be known as AMOCO HUNTER CREEK 10-18-11-2 and would be primarily for the purpose of exploring the production potential from the Mississippian System. The well would be located in an area of southwestern Alberta known as the Whaleback Ridge, and more specifically in the valley of Bob Creek (Figures 1 and 2). The Whaleback Ridge area can roughly be described as the area between the Livingstone Range on the west, Highway 22 on the east, Chimney Rock road/Chaffin Creek on the north, and Highway 517/Oldman River on the south.

1.2 Interventions

Interventions both in favour and opposed to the application were received by the Board from numerous groups and individuals. Interventions opposing the application documented concerns with potential wildlife impacts, appropriate land-use issues, personal, community, and lifestyle impacts, and ecosystem degradation. The safety of the public and Amoco's public consultation program were also significant issues to a number of those who made submissions at the hearing. The general view of those interveners opposing the development was that no energy development should be permitted in the Whaleback Ridge area. Those supporting the application generally cited the economic benefits which might accrue from the exploratory well and subsequent field development should the well be successful in identifying hydrocarbon reserves.

1.3 Pre-Hearing Meetings and Hearing Schedules

A pre-hearing meeting was convened at the offices of the Board in Calgary on 14 December 1993. Its purpose was to receive submissions respecting the scope, venue, and timing of the hearing, as well as requests for advance intervener funding. Following this meeting, the Board issued a Memorandum of Decision (Appendix I) dated 31 December 1993. This decision directed that the hearing of Amoco's application would commence on 25 April 1994 in the Maycroft Community Hall. The Board also stated in this decision that the scope of the hearing would largely focus on the proposed exploratory well and its effects, although some flexibility would be allowed for the interveners to address broader issues. A subsequent request by the Hunter Creek Coalition to delay the start of the hearing by two weeks to allow for adequate preparation of its intervention was granted, and the hearing was scheduled to commence on 16 May 1994.

Requests for advance funding were addressed at a meeting on 27 January 1994.

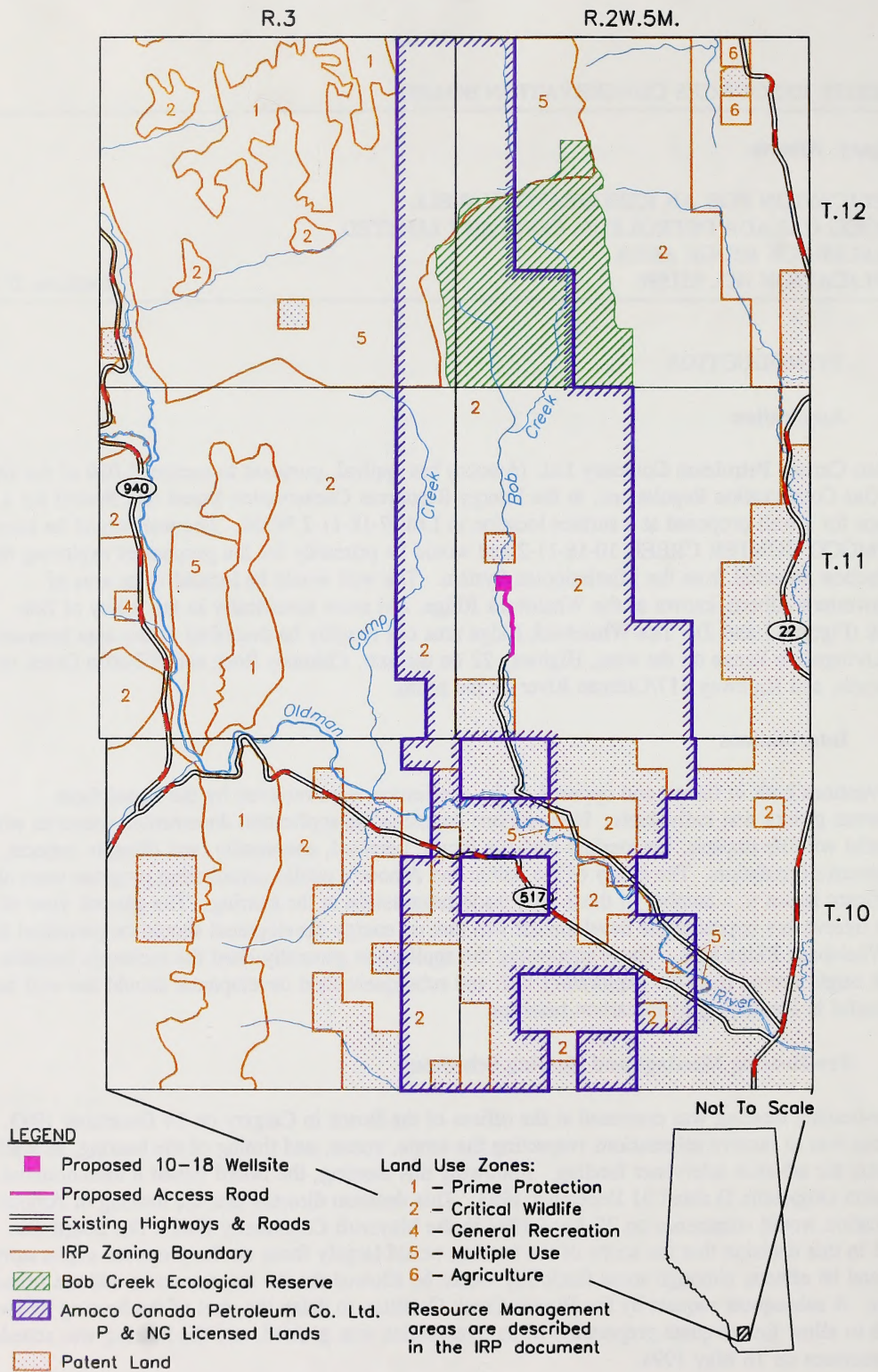


FIGURE 1 AMOCO HUNTER CREEK DEVELOPMENT AREA

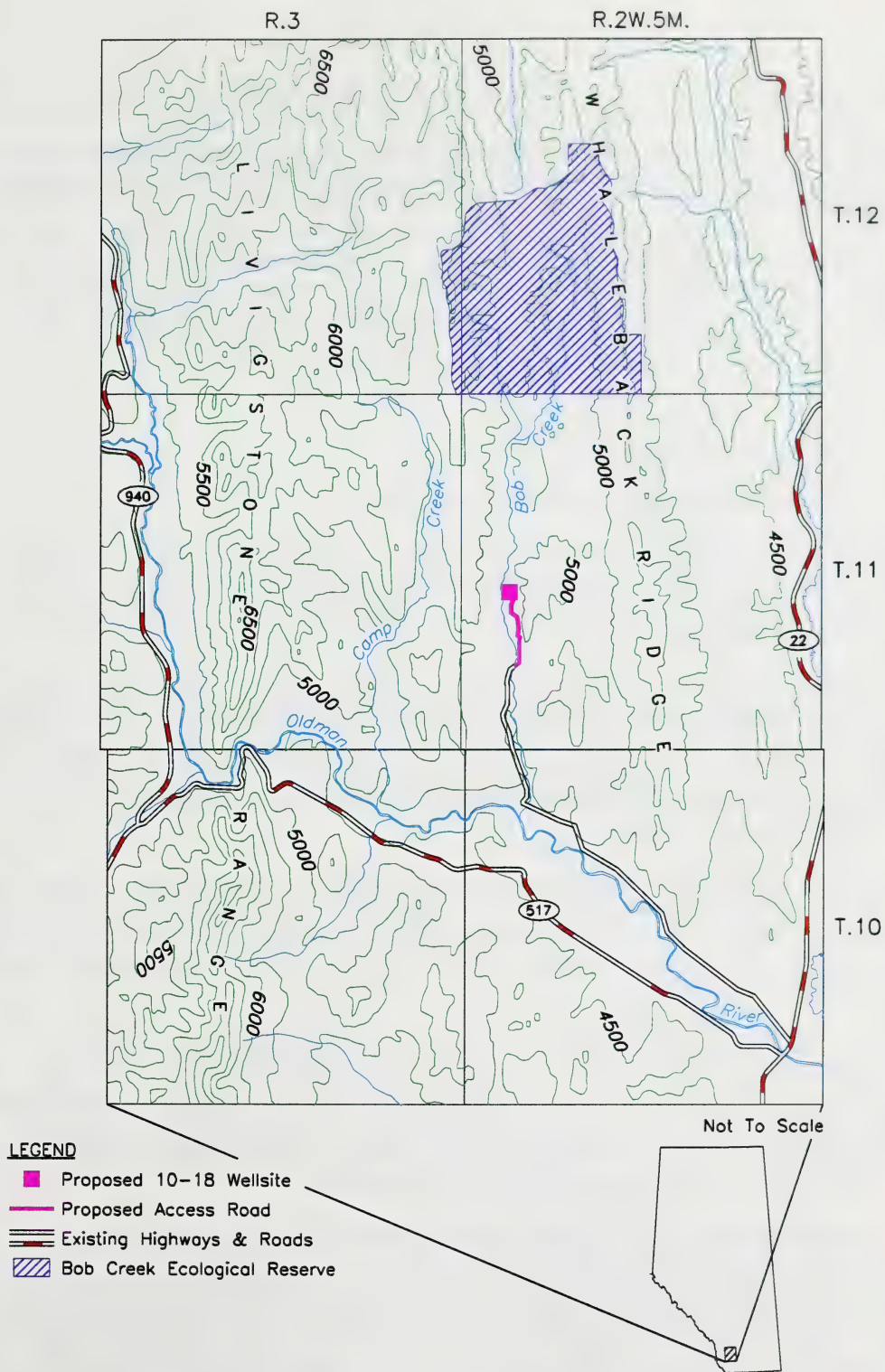


FIGURE 2 HUNTER CREEK AREA TOPOGRAPHY

1.4 Hearing

A public hearing of the application commenced on 16 May 1994 in Maycroft, Alberta, before a division of the Board consisting of F. J. Mink (Chairman), Dr. B. F. Bietz, and R. G. Evans and concluded on 30 May 1994. Those who appeared at the hearing are listed in Table 1.

The following submitted interventions but did not present evidence at the hearing:

Rocky Mountain Ecosystem Coalition, M.D. of Pincher Creek, Village of Cowley, Improvement District of Ranchland No. 6, Castle-Crown Wilderness Coalition, Ida and Verne Dennis, Rick Michalsky, Leo Puerzen, Town of Pincher Creek, Edna and John Drevenak, Val Dennis, Walter Bonertz, James and Veronica Swan, Ron Peters, and Peg Brown.

2 PRELIMINARY MATTERS

2.1 Request to Compel the Attendance of Mr. L. Fitch

At the pre-hearing meeting of 14 December 1993, several interveners advised the Board that they would want staff from Alberta Environmental Protection (AEP) to testify at the hearing. If this participation could not otherwise be arranged, it was asked that the Board request the courts to compel the attendance of AEP personnel at the hearing.

On 29 March 1994, the Hunter Creek Coalition advised the Board that it would be its intention to call Mr. Lorne Fitch, Fisheries Biologist, Southern Alberta Region, Fish and Wildlife Services, AEP, as a witness. The Hunter Creek Coalition then attempted to secure the consent of AEP to have Mr. Fitch appear at the hearing. In a letter dated 14 April 1994, the Hunter Creek Coalition advised the Board that this permission had not been obtained from AEP and thus the Board may be asked to compel Mr. Fitch's attendance at the hearing.

The Board responded to this request in a letter dated 19 April 1994. In its response, the Board denied the request to compel the attendance of Mr. Fitch citing that, although the Board recognized that the environmental impacts of the proposed well were relevant to the hearing, the Board believed that other expert witnesses that would be appearing on behalf of either the interveners or the applicant would be able to deal with those matters.

A written response dated 27 April 1994 from Alberta Justice to the Hunter Creek Coalition summarized AEP's views on the issue. In that letter AEP confirmed that it would not provide Mr. Fitch as a witness at the hearing. It was AEP's opinion that Mr. Fitch had no relevant evidence to give respecting the site-specific details of the application. AEP further felt that there was no compelling reason to believe that the collective expert evidence of the interveners and applicant would be insufficient for the Board to make a decision on the application.

At the hearing the Hunter Creek Coalition again requested the Board compel the attendance of Mr. Fitch as a witness and gave two reasons for its request. The first related to a letter dated 6 January 1994 from Mr. Fitch to the Board. The letter detailed a number of issues related to the wildlife resources in the Whaleback Ridge area and was offered as an approach to reviewing those issues. Board staff distributed a copy of that letter to Amoco as well as to all those who had expressed an interest in the application. The Hunter Creek Coalition said that the only way in which the information in that letter could be adequately examined was to have Mr. Fitch appear as a witness.

TABLE 1 THOSE WHO APPEARED AT THE HEARING

Principals and Representatives (Abbreviations Used in Report)	Witnesses
Amoco Canada Petroleum Company Ltd. (Amoco)	R. L. Findlay, P.Biol.
F. R. Foran, Q.C.	J. G. Ward, Ph.D., P.Biol.
J. M. Liteplo	C. H. Dawson, P.Geoph.
D. G. Arnason	D. M. Innes, P.Eng.
	H. J. Vrielink, P.Eng.
	M. J. Miners, P.Eng.
	D. Chalmers
	All of Amoco
	L.E. Morgantini, Ph.D., P.Biol.
	G. Kupfer, Ph.D.
	D. M. Leahey, Ph.D.
	R. E. Dales, M.D.
	J. A. Lore, P.Ag.
	D. E. Reid, P.Biol.
	J. L. Kansas, P.Biol.
Hunter Creek Coalition	
P. E. J. Prentice, Q.C.	T. Smith
G. S. Fitch	H. Smith
	J. Huntley
	M. McCall
	E. Nelson
	J. Nelson
	T. Molson
	R. Nelson
	P. Nelson
	H. W. Thiesson
	W. D. Wishart
	W. A. Ross, Ph.D.
	W. McMillan
	J. R. Eickmeier, P.Eng.
Whaleback Coalition	
G. T. H. Locke	J. A. Tweedie
R. Smith	C. Wallis, P.Biol.
	D. L. Pachal
	K. Van Tighem
	M. Gerrand
	W. Francis
	R. Longair, Ph.D.
Peigan Nation	
C. Figol	B. Pard
	J. C. Elliott, Ph.D.

Antelope Butte Ranch
H. Lynch-Staunton

D. Sheppard, Ph.D.

S. Marty

K. Jericho

R. Hoff

E. Squair

M. Prusky

Federation of Alberta Naturalists (FAN)
and Alberta Fish and Game Association (AFGA)

M. Posey

R. D. MacDonald

W. C. Ranching
W. Wolbert

Top Hand Industrial Services
S. Aris

Diamond Hitch Outfitters
M. Judd

Pincher Creek Chamber of Commerce
R. Dykin

J. McFarland

Alberta Justice (Representing Alberta Environmental Protection and Agriculture Food and Rural Development)

R. Bodnarek

Energy Resources Conservation Board staff

M. J. Bruni

R. Creasey, P.Biol.

M. Miller

P. Oscienny, P.Eng.

C. Hill

Secondly, the Hunter Creek Coalition believed that Mr. Fitch could best speak to a statement read into the record at the hearing by Alberta Justice on behalf of AEP and Alberta Agriculture, Food and Rural Development. The statement outlined the legislation to which the proposed well was subject, the purpose of the Crown's participation in the hearing and a description of the provincial administrative referral process involved in granting the surface and subsurface dispositions for the proposed well. These included a Mineral Surface Lease (MSL), a Licence of Occupation (LOC) and Petroleum and Natural Gas Rights (mineral lease).

The Whaleback Coalition, the Alberta Fish and Game Association, and the Federation of Alberta Naturalists supported the request made by the Hunter Creek Coalition.

It was the position of the Crown that the Board should deny the Hunter Creek Coalition's request on the basis that it did not provide compelling or substantive reasons as to why the evidence presented by the witness would be critical to the Board's decision or why this information would not be brought out through the interveners' or applicant's expert witnesses.

The Board ruled that it would not compel Mr. Fitch to attend the hearing. The Board stated that there was no new substantive evidence raised since its original decision on 19 April 1994 and it continued to believe that issues raised in Mr. Fitch's letter may be adequately dealt with by experts on both sides of the argument.

2.2 Rights of the Peigan Nation

Although the interests of the Peigan Nation in relation to this single exploratory well licence application have been incorporated with the views of the other interveners on an issue by issue basis, the Board believes it appropriate to separately discuss how the rights and claims of the Peigan Nation would be considered by the Board.

At the hearing, the Peigan Nation noted that it had a number of claims, including ownership of the mineral rights, against the land in question. It argued that a provincial tribunal should not be making decisions which might ultimately interfere with the Peigan Nation's ability to exercise those rights. The Peigan Nation stated that the ERCB does not have jurisdiction, as a branch of the Provincial Government, to abrogate or derogate from the existing aboriginal and treaty rights of the Peigan Nation. The Peigan Nation did not ask the Board to affirm its rights but rather to take the opportunity to understand those rights in the context of the Whaleback exploratory well proposal.

The Peigan Nation also asked the Board to ensure that its rights and interests were taken into account in reaching a decision on the Amoco application. It was noted that any impact the well may have on the Peigan Nation's ability to transmit its culture and identity from one generation to the next would not be in its interest. The Peigan Nation also stated that it had little chance to reap the economic or social benefits which Amoco claimed could accrue to the Province.

The Board recognizes that the Peigan Nation has certain treaty rights which are protected under the Canadian Constitution. Although the Peigan Nation claim that the area of the proposed exploratory well encompasses their traditional rights, this Board is not able to identify to what extent the aforementioned rights apply to this area.

The Board agrees with the Peigan Nation that the issue of what its treaty rights are and where they apply are not matters under the Board's jurisdiction. The Board believes that all interveners participating at the hearing represent interests in the area and it has an obligation to consider and incorporate those interests in deciding the merits in the context of the broad public interest.

3 ISSUES

The Board has reviewed the concerns raised by the hearing participants and believes the significant issues to be considered are:

- information requirements,
- need for the exploratory well,
- location of the exploratory well,
- potential future development,
- public health, safety, and quality of life,
- public consultation, and
- land use.

Each issue is addressed in the following sections.

4 INFORMATION REQUIREMENTS

4.1 Views of the Applicant

Amoco stated that it had gathered and studied a large amount of environmental data and had presented a detailed plan that would allow the drilling of the exploratory well in an environmentally acceptable manner. Amoco stated several times during the hearing that, given typical circumstances for an exploratory well application, the amount of information supplied was extraordinary.

Amoco noted that it had prepared the submission in support of its application to drill the 10-18 well in part in response to a letter of 5 November 1993 from ERCB staff setting out their information requirements. Amoco also referred to Informational Letter IL 93-9 (Appendix II), which sets out the general information expectations of the Board for oil and gas proposals on the southern portion of the Eastern Slopes¹. Amoco pointed out that this IL had in fact been released six months after the submission of its application and therefore its application had been prepared during a period of changing information requirements. Despite this, Amoco believed that its application also generally met both the spirit and intent of IL 93-9. In particular, Amoco noted that the level of information needed for an initial exploratory well as per IL 93-9 could, in some cases, be less than was required during later proposed development stages. In Amoco's view, this interpretation of IL 93-9 applied to the 10-18 well and was in fact supported by the Board's 31 December 1993 Memorandum of Decision (Appendix I). Amoco pointed to the Board's request in that memorandum that the hearing should focus primarily on the single well described in the application rather than on the full development scenario.

¹ Refer to map in Appendix II for description of southern Eastern Slopes boundaries.

At the hearing, Amoco also filed a detailed response to the issues which had been raised by the various interveners. Amoco noted that it did so to help reduce the need to present rebuttal evidence and thus expedite the hearing process.

4.2 Views of the Intervenors

The general adequacy of the information provided by Amoco, and whether it had met the more specific information requirements set out by the Board in IL 93-9 and by Board staff in the letter of 5 November 1993, was questioned by the Hunter Creek Coalition, the Whaleback Coalition, and the Peigan Nation. In their view, IL 93-9 in particular set out broad types of information that the Board would need before being able to adequately assess the merits of the application.

Amoco, it was argued, had in fact failed to address a number of issues identified in IL 93-9 as well as some requirements in the letter of 5 November 1993. These included, in particular, the incremental nature and relative significance of the project's impacts. Baseline conditions of particular interest to the Peigan Nation (e.g. the presence of sacred sites, ethnically valuable plants, etc.) were also not considered to have been addressed. It was also argued that Amoco's responses to at least some other issues, such as health impacts, were marginal at best. The interveners believed that, because Amoco had failed to meet the Board's requests for information, the Board had no choice but to deny the application.

The similarity between the wording in IL 93-9 and the Environmental Impact Assessment (EIA) sections of Alberta's Environmental Protection and Enhancement Act (EPEA) was also noted by the interveners. They suggested that IL 93-9 was designed to offer an alternative to the EIA requirements of EPEA since the drilling of oil and gas wells is normally an activity exempt from those requirements. In the interveners' view, this created an additional onus on the applicant to address each of the issues set out in IL 93-9. In their view, IL 93-9 in effect required an EIA and since Amoco had failed to provide such a document, the application must be considered deficient and therefore denied.

The Hunter Creek Coalition also raised concerns with regard to the fairness of Amoco's submission at the outset of the hearing of written responses to issues raised by the various interveners, including the Hunter Creek Coalition. It was argued that, at a minimum, such evidence should be filed in advance of the hearing in order that any cross-examination could be more adequately prepared.

4.3 Views of the Board

When IL 93-9 was developed, it was the intention of the Board that the document would act as a general guide to companies seeking approval to explore for and develop energy resources along the southern part of the Eastern Slopes. Although the oil and gas industry routinely prepares thousands of applications for oil and gas developments throughout Alberta every year, the Board was of the view that this region was sufficiently unique that additional direction to industry was of value. The IL noted the Board's expectation that applicants in this area would place particular emphasis on public consultation and would, to the best of their ability, describe the possible extent of their developments should their initial exploration activities prove to be successful. This latter requirement was set out in order to give both the Board and potentially affected parties a better opportunity to be able to place the proposed development within an overall development context. IL 93-9 also directed that, where feasible, applicants were expected to coordinate their developments with other operators in the region. Finally, applicants were expected to address environmental and social issues in a manner which best

reflected the potential sensitivity of the various regions along the Eastern Slopes. The level of assessment would vary as a function of development stage, type, and relative sensitivity of each region.

It is important for all parties to appreciate that IL 93-9 was always intended solely as a guide to the range of information industry should consider in preparing applications within the southern portion of the Eastern Slopes. The guidelines are not intended to be all inclusive of any issues the Board may eventually consider in reaching its final decision. Ultimately, each applicant is responsible for identifying issues and addressing those issues to the degree to which it believes appropriate. The Board is then charged with measuring the application against the broad test of "public interest", including environmental, social, and economic costs and benefits. The failure of any applicant to address one or more of the guidelines set out in IL 93-9 does not automatically mean that the application must also fail, since they should not be viewed as a prescription of the public interest test. Rather, each application will be measured based solely on its overall merits to determine whether granting approval would be in the overall public interest.

A similar test exists in this case with regard to the information request set out in the Board staff letter of 5 November 1993. The staff letter was prepared to assist Amoco in preparing adequate information for the Board to consider the merits of the application. It is site specific, but it encompasses the spirit of IL 93-9 which was being prepared by the Board at that time. Again, the Board expected Amoco to address each question as fully as it believed necessary to convince the Board that its application was in the public interest. Since there were public submissions in this case, the ultimate acceptability of Amoco's application was determined through a public hearing. This report sets out the Board's findings on the various key issues which it has determined are relevant to this particular application.

The Board wishes to emphasize that, with regard to the environmental information required of an applicant, it was never the Board's intention that every application in the southern portion of Alberta's Eastern Slopes would need to address each and every issue set out in IL 93-9. The IL, in fact, clearly states that the level of information appropriate will remain a function of the nature of the proposed development and of the relative environmental sensitivity of the area proposed to be developed. The Board believes that this approach is parallel to that contained in EPEA, which allows discretion to be applied by the Director in establishing the issues which must be addressed in an EIA. The Board believes that a prescriptive, inflexible approach to the provision of environmental information would be neither useful nor appropriate.

It is also important to note that applicants cannot assume, because an issue was not raised by Board staff during their review of an application (e.g. the 5 November 1993 letter), that the issue may not become important, or even pivotal, during the hearing process. Again, the onus remains on the applicant to respond to and/or address all issues which it believes the Board should consider in assessing its proposal, and to do its utmost to discern relevant issues of concern, particularly to residents in the vicinity of the well. The Board also considers the public hearing as a continuum of the information gathering process needed to reach a decision. When a public hearing occurs, the Board accepts that some issues or clarification of information submitted in the application will be developed during the hearing.

The Board considered all the information submitted by Amoco and found that Amoco has generally attempted to meet the intent of IL 93-9. The Board does not accept the intervener position that the application was in some way flawed so badly, due to lack of information, that it should not even be

considered. The Board found the information was adequate to proceed to a hearing on the disposition of the application.

5 NEED FOR THE EXPLORATORY WELL

5.1 Views of the Applicant

Amoco indicated that it had obtained the petroleum and natural gas rights from the Province of Alberta to 61 sections in the Whaleback area (Figure 1) and, providing it could demonstrate a commitment to safety and environmental mitigation, that it should be provided a fair opportunity to produce any reserves associated with those mineral rights. Amoco stated that new exploration theories and seismic interpretation techniques, coupled with new seismic data collected in 1992/93, had caused it to believe that a geologic structural anomaly existed in the Whaleback area. The primary prospect was interpreted to be a thrust faulted unit of the Mississippian Turner Valley formation. The validity of the seismic interpretation and the presence of the anomaly could only be confirmed by the drilling of an exploratory well. Amoco further stated that the well would test for the existence of any hydrocarbon-bearing formations present within the structure, delineate the potential size of the structure, assess the possible areal extent of any hydrocarbon accumulations discovered and establish whether these would be capable of economic flow rates.

Under cross-examination, Amoco indicated that the chance of the exploratory well discovering a hydrocarbon-bearing structure in the higher Mississippian system was about 38 per cent and in the deeper Devonian system, much lower, perhaps less than 10 per cent. If the well was successful, Amoco did not consider that it would be commercially productive on its own. The well's primary purpose was to obtain information and it would not be produced in the short term, other than for test purposes.

As one component of the need for the well, Amoco noted that its natural gas production base, as well as that of Alberta, is in decline and that new sources of gas are needed to satisfy growing domestic and export markets. It presented a National Energy Board graph of Canadian Supply/Demand Forecast to support its argument. If the exploratory well was successful, Amoco contended it could ultimately lead to the development of gas reserves of up to $88\,700\,10^6\text{m}^3$ (2.5 TCF) with a base case of $42\,600\,10^6\text{m}^3$ (1.2 TCF). It submitted that the benefit to the Alberta economy and to government revenues of developing reserves of this size was very significant. This volume could represent an addition of over 2 per cent to the known remaining gas reserves of the province and could provide 2 billion dollars of increased government revenue. Amoco maintained that the exploratory well was therefore in the public interest.

5.2 Views of the Interveners

Those interveners opposed to the drilling of the well argued that, to be considered in the public interest, Amoco must demonstrate that the need for the well outweighed the potential negative social and environmental impacts associated with the well and the access road. They contended Amoco had not provided sufficient technical evidence to support the need for the well. Specifically, they pointed out that Amoco had not filed any geological or geophysical information, such as geological maps or cross-sections, that could be used by the Board to assess the need for the well.

The interveners expressed concern that while the focus of the hearing was primarily on the negative impacts of the proposed single exploratory well, Amoco was presenting the benefits of a successful development scenario. They noted that the only benefits which would be derived from a single exploratory well would be new information and that it was against those benefits that any environmental and social costs should be measured. They also noted that Amoco admitted the odds of a successful discovery and the magnitude of the economic benefits associated with its development were highly speculative. The interveners were not satisfied that the limited benefits and highly speculative nature of the prospect offset the environmental and social costs.

The interveners also disagreed with Amoco's position that the acquisition of a mineral lease should ultimately allow a company to drill an exploratory well. They submitted that it was the Board's decision to approve or deny the application based on a weighing of the evidence presented before it. They suggested that the potential for denial of a well licence was one of the risks attendant with the purchase of a mineral lease.

The interveners also questioned the need for new gas reserves. At the hearing, Amoco, in response to questioning, stated that approximately 56 per cent of its gas produced in Alberta in 1993 was exported to the United States. Therefore, the interveners argued Alberta did not, per se, require more gas or gas reserves to meet its requirements, but rather that any new gas would be used to support exports.

Interveners in support of the well licence application did so based on the potential economic benefits that would accrue to the local economy and to Alberta as a whole. They believed that the potential impacts of the well could be satisfactorily mitigated and the economic benefits would outweigh any social or environmental costs.

5.3 Views of the Board

The Board accepts that Amoco, through its Petroleum and Natural Gas Lease, has the right to explore for gas in the Whaleback area, subject to it obtaining such other permits, licences, and approvals as are required by the legislation. Further, provided the public interest tests can be met, the Board accepts that an exploratory well would be needed in order to evaluate the seismic prospect, obtain geologic information, and determine the potential for future development. The Board also recognizes that there is some, albeit unknown, potential for a significant discovery in the Whaleback area and that substantial economic benefit could flow from such a discovery. The Board does note, however, that Amoco chose not to provide any technical evidence to support its predictions of either the probability of encountering hydrocarbons or the potential size of the reserves. As a result, Amoco's contention remains untested, although Amoco's estimate of the chance of a successful well appears typical of the industry. In this case, the Board concurs with the position of some of the interveners that the potential economic value of eventual development is unknown and that the value of the proposed well to the Alberta public is solely based on the information it may provide upon completion and testing.

While the Board accepts Amoco's right to explore for and develop hydrocarbons in the Whaleback and therefore its need for the well, the Board does not believe that either the acquisition of mineral rights or a surface lease agreement in any way automatically confers the right of an applicant to a well licence. The Board must balance Amoco's need for the well against the potential economic, social, and environmental costs and benefits accruing to the public from the exploration well.

Therefore, the Board would neither approve nor deny the application on the question of need alone. The Board must be convinced that certain safety, social, and environmental impacts can be or will be satisfactorily mitigated before the well would be approved. These impacts will be discussed in later sections of this report.

The Board also cannot accept the argument that because some portion of the gas found may be destined for export, that the need for the well is reduced. The Board notes that much of Alberta's economic wealth, be it from agriculture, forestry, or energy is based on the export of products. The Board believes that protecting the economic well-being of the Province is clearly one component of the public interest. The Board also notes that any attempt to limit production, if necessary to meet such an implied supply/demand test, would have to be applied fairly to the industry as a whole via the Province's gas removal policies, rather than through individual project development restrictions as proposed by some interveners. The Board does not consider such a restriction as either appropriate or necessary.

6 LOCATION OF THE EXPLORATORY WELL

6.1 Views of the Applicant

Amoco stated that it had chosen the well location based on its desire to encounter the highest crestal position on the anomaly and to locate the well on an east-west oriented seismic line. Constraining the well to a location on a seismic line was considered critical to validate its seismic interpretations. Amoco indicated that the optimal bottom-hole target area extended approximately 1 kilometre east, 0.5 kilometres west, 100 metres north, and 100 metres south of the selected surface-hole location. The selected surface location took into account environmental considerations and had been chosen after consultation between Amoco, the surface grazing lease holder, and representatives from AEP. Amoco indicated that the site it had originally selected, which was 405 metres west of the site eventually agreed upon, would have resulted in increased surface disturbance and an additional crossing of Bob Creek.

Alternative surface locations to the south had been ruled out by Amoco because a complex structural discontinuity in the anomaly was interpreted from the seismic to exist in that direction, with a corresponding drop of about 200 metres in structural elevation. Amoco contended that drilling a well in this location would also leave a substantial part of the anomaly untested. Amoco did not consider selecting a surface location further to the south and directionally drilling the well north to its preferred bottom-hole location because the well trajectory would not underlie a seismic line and so would not adequately test its seismic interpretation. Amoco said that it intended to monitor, but not specifically control, the directional drift of the well during drilling.

6.2 Views of the Intervenors

Intervenors opposed to the well licence application submitted that the application was deficient with respect to supporting evidence for the siting of the proposed well. In their view, because no technical evidence had been presented, it was not possible to determine if alternative locations existed. They argued that less intrusive locations, such as 2.6 kilometres further south at the end of the existing road, had not been discussed by Amoco. Amoco's contention that a structural discontinuity south of the proposed well location ruled out the possibility of moving the well south was also questioned. Again, the intervenors did not believe that Amoco had provided sufficient geological or geophysical

evidence to support its argument. They further questioned the likelihood that a well spudded at a surface location of 9-18 would reach a bottom-hole target in 10-18. They argued that the tendency of the well to naturally drift perpendicular to the direction of dip would, in the absence of directional drilling control, cause the well to reach total depth east of the surface location. The interveners suggested the Board defer approval of the well until geological and geophysical data supporting the location were provided.

6.3 Views of the Board

The Board recognizes that, if approved, the well must be situated so that it can reasonably achieve Amoco's objectives, while at the same time minimizing surface-related impacts. The Board accepts that Amoco would strongly prefer to locate the well on a structurally favourable position as well as along a seismic line. However, considering the potential size and trend of the structure interpreted by Amoco, the Board is concerned that alternative locations were not presented and discussed. The Board notes that the interveners expressed dissatisfaction with the lack of data presented with respect to the subsurface location of the well. This concern is shared by the Board, particularly as it relates to the technical and economic impact of moving the well to another location which would reduce surface impacts.

The reasons Amoco cited which preclude an alternative location to the south are generally understood; however, no data were presented in support of its arguments. In this regard, the Board is not convinced Amoco has adequately demonstrated the need to locate the well at the proposed location.

The Board accepts Amoco's need to retain its competitive position by not divulging information it considers proprietary, but enough information must be presented to the Board to allow the geologic limitations of alternative locations to be weighed against the potential benefits or impacts of those locations. Given the environmental sensitivity of the area, the Board questions whether the proposed 10-18 location is the only acceptable site from which to gain the geologic information of interest to Amoco. The Board recognizes that moving the well site in any direction would still result in other issues of concern to several interveners. However, the Board would prefer, in this case, to be convinced that the applied-for location is the optimum site. Prior to approving the 10-18 site, the Board would expect Amoco to address and support the rationale of site selection and possible options in more detail.

7 POTENTIAL FUTURE DEVELOPMENT

7.1 Views of the Applicant

Amoco applied for a well licence for the 10-18 well only but, at the request of the Board, identified potential full-field development options assuming the proposed exploration well is approved and ultimately is successful in discovering commercial quantities of natural gas. In an effort to minimize surface impacts which might be created by gas field development, Amoco studied three different pool development scenarios which were discussed with area residents as a component of Amoco's public consultation program. One of the following scenarios would potentially be initiated subsequent to additional successful delineation drilling north and south of the exploration well:

Scenario 1

This approach is described as a traditional program in that it involves the drilling of single wells on a total of 20 individual well pads. The access for the northwest wells will be from the west, and the remaining wells will have common road/pipeline corridors or utilize existing roads to provide access. The pipeline gathering system would probably be routed south to connect the wells in the Bob Creek valley utilizing common road/pipeline corridors. Amoco is not proposing to pursue this type of development program for any commercial development of the Whaleback area.

Scenario 2

In this scenario, Amoco proposes to utilize conventional and directional drilling to drill two wells per pad from approximately 10 pads. Similar to Scenario 1, the northwest wells may be accessed from the west, but the pipeline system will be routed to the south. The other well pads will have common road/pipeline corridors or be accessed from existing roads. Amoco stated that this is a possible development scheme, if the preferred development plan (Scenario 3) is not found to be attainable.

Scenario 3

Amoco's preferred development plan would utilize extended-reach drilling technology to permit drilling of, normally, four wells per pad from approximately 5 pads, which would significantly reduce the surface disturbance from roads, pipelines, and well sites. Similar to the other development scenarios, the northwest wells in Scenario 3 may be accessed from the west and the pipeline routed south. The other well pads will have common road/pipeline corridors or be accessed from existing roads.

Amoco also made commitments to the community that a sour gas processing plant would not be constructed in the Bob Creek valley. If gas is found in commercial volumes, Amoco proposed to transport the production by pipeline to processing facilities outside of the Bob Creek valley. Amoco indicated there are no gas plants in the region that presently have sufficient capacity to handle the anticipated Hunter Creek gas volumes. As a result, Amoco provided possible alternative concepts to process the Hunter Creek gas. These were: expansion of existing plants at either Saratoga (Crowsnest Pass Municipality) or Shell Waterton, or construction of a new gas plant in either the Crowsnest/Pincher Creek corridor or along the Highway 22 corridor.

At the hearing, Amoco noted that some of the reservoir parameters, such as depth encountered and type of fluid properties, will be factors in determining whether the preferred scenario is possible. Until the exploratory well is drilled and evaluated, any development program is speculative.

7.2 Views of the Interveners

Several interveners expressed concern with the practicality of multi-well extended-reach drilling from single pads as opposed to more traditional drilling of single wells from individual sites. As a result, they believed that if the application is approved, 20 wells on individual pads was a much more probable basis on which the development would proceed. They believed that Amoco's proposal to drill wells with between 1000 and 3000 metres of extended reach, given the probable well depth and the problems associated with encountering hydrogen sulphide, was optimistic and overly simplistic.

The interveners were particularly concerned that Amoco had not provided any technical evidence to support the capability of drilling rigs or adequacy of drill strings to drill 1000 to 3000 metre extended-reach critical sour wells to 4200 metre vertical depth. They also had a concern with Amoco's ability to maintain hole integrity and the adequacy of casing strings and well tubulars to withstand the loads and stresses to which they will be subjected under the proposed drilling scenario. Based on the above, the interveners indicated there was no evidence that supports Amoco being capable of drilling the subject well or subsequent wells directionally from multi-well pads. The interveners indicated that, in addition to their own review, the Board has also noted the difficulty of extended-reach drilling in steeply-dipping foothills geology (Decision Reports D 88-16 (Shell Whitney Creek); D 94-1 (Mobil Ricinus); and D 94-2 (Husky Moose Mountain)).

The interveners also questioned the experience of Amoco staff and the ability of the Amoco organization to safely drill a sour gas well of in the range of 4000 metres in depth. Reference was made to the Lodgepole blowout of 1982, as well as other projects where well control problems had been experienced by the oil and gas industry.

7.3 Views of the Board

The Board found Amoco's attempt to describe its potential full-field development scenario, particularly in the absence of exploratory data, useful. While the Board realizes the proposal is, at best, highly speculative, the Board believes that the exercise has provided value in assessing the costs and benefits associated with approval of the initial exploratory well. The Board is reasonably certain that, should the exploratory well be successful, Amoco will wish to develop the field in some manner. The discussion, even at this very early stage, of the range of development scenarios, allows the Board to determine if there are aspects of future development which would clearly make the proposal unacceptable. Advance notice of such a situation is presumably of benefit to all parties involved, including the applicant.

The Board notes the considerable discussion regarding the feasibility of Amoco's development scenario involving extended-reach directional drilling of up to 3000 metres of horizontal displacement. This magnitude of displacement far exceeds any other such efforts in Alberta in similar geologic settings. The Board is aware that extended-reach drilling technology has advanced rapidly in recent years with increased application of horizontal drilling, better drilling bit design, and technologies related to directional drilling with down-hole motors. The ability to achieve the displacements outlined in the development scenarios would be subject to technical constraints such as subsurface lithology and borehole stability, as well as economic constraints such as the costs related to increased use of down-hole motors. The metallurgical limitations on drill pipe and casings imposed by the high H₂S content of the reservoir and the severe weight, torque, wear, and bending stresses likely to be encountered lead the Board to question whether such drilling programs can be conducted with a suitably high degree of confidence and safety. Considering both technological advances and the lack of precedent, the Board considers Amoco's future vision to be, at best, at the outer bounds of current technology available in Alberta.

The Board believes that there is a reasonable probability that should development proceed, it is likely that more well pads than hoped for in the preferred scenario will be required, or that other changes will be needed in the development scenarios. This raises the possibility of different, and possibly more severe, environmental effects which would need to be balanced at a later stage against the claimed economic benefits from full-field development.

It is not the Board's intent to judge upon the merits of the development program at this time. The foregoing comments are offered for the purpose of providing a framework to compare the benefits of the Amoco proposal to the possible negative impacts as outlined by the Hunter Creek and Whaleback Coalitions, the Peigans, and some other interveners.

8 PUBLIC HEALTH, SAFETY, AND QUALITY OF LIFE

8.1 Views of the Applicant

Amoco, while recognizing the concerns of area residents, was confident it could drill the proposed well without seriously compromising the residents health, safety, or quality of life.

8.1.1 Drilling Activity

Amoco anticipated it would require approximately 150 to 200 days to drill and complete the proposed 10-18 exploratory well to a depth of 5600 metres with up to 1000 metres of horizontal displacement. In its submission, Amoco outlined potential incremental negative impacts which might be experienced by area residents during the drilling program and the various mitigative options it proposed to use.

The primary activities required to carry out the program included: construction of the access road; construction of the well pad; assembly, operation, and removal of the drilling rig; and completion and testing of the well. Impacts on nearby residents could include: increased dust, noise, and potential for accidents resulting from increased traffic. To reduce the impacts associated with increased traffic, Amoco proposed to restrict access to the well site to essential vehicles only, to complete construction in a timely manner, to post and enforce speed limits for its employees and contractors, to use a water well at the well site to eliminate water supply traffic, and to water the road as necessary to reduce dust. To reduce the visual and noise impacts associated with drilling and completing the well, Amoco proposed to complete these operations as expeditiously as possible.

To further reduce the impacts of its drilling program on area residents, Amoco proposed to locate its campsite outside of the emergency planning radius, in an area agreeable to the local residents, but preferably on the existing access road heading west off Highway 22 on the north side of the Oldman River. Access to the well site would be restricted by a manned gate located adjacent to the camp. Rig crews would be transferred to and from the rig in a crew vehicle in order to further reduce unnecessary vehicles travelling beyond the campsite.

8.1.2 Blowout Prevention

Amoco stated that in order to reduce the risk of loss of well control (ie. blowout), it had incorporated equipment and drilling procedures which met or exceeded the current standards and guidelines for drilling critical sour wells. Amoco had surveyed data from other wells in the vicinity to identify potential drilling problems and had incorporated solutions to these problems in its program. Amoco stated that during drilling of the well, competent supervisory staff would be on site at all times. Field information would be transmitted instantaneously to Calgary where the data could also be reviewed by Amoco's drilling personnel. In accordance with ERCB regulations, appropriate on-site personnel would be certified in well control procedures. Blowout prevention drills and safety meetings would be conducted on a regular basis.

8.1.3 Emergency Response Plan

Amoco submitted that it had prepared an emergency response plan which would ensure the safety of people in the area if a release of sour gas were to occur during drilling of the well. The plan applied to an emergency planning zone radius of 7.5 kilometres. Based on the types of drilling equipment specified, a 4 kilometre planning zone radius would normally be required. By using the larger planning area, Amoco was able to include a number of residences to the south of the drill site along the Bob Creek and Oldman River valley. The emergency planning zone included both ranchland and forest reserve and contained 9 permanent dwellings, 4 seasonal dwellings, 1 abandoned house, 1 community centre, and 1 fire lookout.

Amoco indicated that, as an additional safety measure, it would implement a voice-paging system. It proposed to use portable pagers that will be given to residents and transient land users, such as hunters and outdoor enthusiasts. The system would be used to provide a daily report on the well status, as well as to advise if an emergency situation had developed at the well. Amoco stated that this type of system had been used in the Caroline development but had not been used or tested in the Maycroft area as yet.

Amoco stated that its preferred method of dealing with public safety in the case of a blowout at the 10-18 well would be evacuation of those people at risk, rather than ignition. It also asked that the requirement for a dual (ie. redundant) ignition system be waived. Amoco submitted that it believed it had developed a plan which would adequately deal with all contingencies that might occur in the event of a blowout. As a result of its approach, Amoco concluded that if an uncontrolled flow occurred, immediate ignition of the well should not be a requirement. In response to questioning from the interveners, Amoco stated that a dual ignition system, due to the remoteness of the proposed 10-18 well, was not necessary. Amoco did agree that the well would be ignited if necessary to protect public health and safety.

8.1.4 Emissions

Amoco noted that atmospheric emissions from the well could arise from three scenarios. These were:

- (a) sulphur dioxide (SO_2) associated with the flaring of controlled volumes of sour gas required as part of the testing of the completed well,
- (b) hydrogen sulphide (H_2S) associated with an uncontrolled release of sour gas before ignition, and
- (c) SO_2 associated with an uncontrolled release of sour gas after ignition.

Using modelled results based on an understanding of atmospheric dispersion and meteorological conditions generally associated with irregular terrain and air flows within valleys, Amoco determined the most likely concentrations of emissions in the Bob Creek valley for a range of release scenarios. Estimates of ground-level concentrations were provided along the valley floor and, in some cases, along valley ridge tops.

Ground-level SO_2 concentrations estimated to occur during flaring were based on an assumed extended test flow rate of 210 000 m^3 per day for gas containing 15 percent H_2S . Estimates of ground-level

H₂S and SO₂ concentrations from an uncontrolled gas release were based on three different gas release rates, each containing a different H₂S percentage. The uncontrolled release scenarios modelled were:

- a most-probable uncontrolled release of 570 000 m³ per day containing 15 percent H₂S,
- a worst-case uncontrolled release from the Mississippian System of 1 605 900 m³ per day containing 28.4 percent H₂S, and
- a worst-case uncontrolled release from the Devonian System of 3 521 000 m³ per day containing 28.2 per cent H₂S.

The "worst-case" release values (rate and H₂S content) used corresponded to the ERCB's well licensing and emergency planning requirements. These require that the applicant combine the highest observed H₂S content from offset wells with the highest observed flow rates for the same wells. In developing both the most-probable release scenario and the worst-case scenario, the applicant used the release rates and H₂S contents of wells within the Coleman and Savanna Creek fields. An average release rate and H₂S content was used to calculate the "most-probable case".

Flaring during well testing was assumed to be from a 30-metre stack. Uncontrolled releases were assumed to be released at ground level. Ground-level concentrations were related to several atmospheric conditions and a moderate wind speed of 6 metres per second.

Estimated SO₂ Concentrations

During either flaring or ignition of an uncontrolled release of sour gas, H₂S contained in the gas is converted to SO₂. The SO₂ will initially rise due to the heat from burning, disperse, and dilute into the atmosphere and eventually return to the ground. The plume rise associated with burning the gas typically eliminates immediate danger to residents and personnel at the site.

During flaring operations, the maximum predicted ground-level concentrations of SO₂ would normally be less than 0.2 ppm as an hourly average value but, under some conditions, could reach 0.5 ppm. These values marginally exceed the provincial hourly ambient guideline for SO₂ (0.17 ppm on an hourly average basis), but peak instantaneous values could be up to three times higher. Amoco agreed that flaring during chinook winds should be avoided to prevent SO₂ impingement along the ridge tops.

In order to monitor SO₂ levels during flaring, Amoco planned to investigate the use of ambient air monitoring equipment mounted on a trailer that could be positioned by an all-terrain vehicle. Amoco stated this would significantly increase the areas in which monitoring for SO₂ emissions could take place and would enable monitoring to take place on the ridge tops adjacent to the well site.

In the event of an ignited, most-probable uncontrolled release, the maximum predicted ground-level SO₂ values would normally be less than 0.13 ppm, but could reach 0.89 ppm under some conditions. For a worst-case ignited release from the Mississippian, the maximum predicted SO₂ levels would normally be less than 0.32 ppm, but could reach 1.4 ppm. For a worst-case ignited release from the Devonian, the maximum predicted SO₂ levels would be less than 0.26 ppm, but could be as high as 1.2 ppm. The locations at which these maximums occur are dependent on wind speed and atmospheric conditions.

The highest SO₂ concentrations from ignited releases were generally associated with plumes entrained within valley air flows. During brief meteorological transition periods when air flows may expose ridge tops to the plume, concentrations of 10, 36, and 75 ppm SO₂ (on an hourly average basis) could be experienced on the ridge tops during the "most-probable", worst-case Mississippian and worst-case Devonian releases, respectively.

Estimated H₂S Concentrations

If the well were not ignited during an uncontrolled release, there would be limited lift or heat to move gaseous emissions into the atmosphere. As a result, H₂S concentrations would be highest proximal to the well and decline with distance from the well. The highest one-hour average concentrations of H₂S which were predicted to occur at the two closest residences and at the edge of the emergency planning zone are shown in Table 2. These conditions could occur at the nearest residence within 10 to 15 minutes of an uncontrolled release.

TABLE 2 GROUND-LEVEL H₂S CONCENTRATIONS (PPM) WITH DISTANCE FROM THE 10-18 WELL DURING AN UNCONTROLLED RELEASE

Release Scenarios	Distance From Well		
	2300 m (1st residence)	5900 m (2nd residence)	7500 m (edge of EPZ)
Most Probable	12	2	1
Worst Case (Mississippian)	60	12	8
Worst Case (Devonian)	140	22	18

In its submission to the Board, the Hunter Creek Coalition raised concerns with regards to the potential impacts of sour gas emissions on their health. Amoco did not, however, specifically comment on the potential risk to health associated with its predicted levels of either SO₂ or H₂S.

8.1.5 Contaminants

Amoco recognized a potential for impacts on soil, vegetation, wildlife, and water resources resulting from contaminants associated with construction activities and drilling of the proposed exploratory well and outlined its plans for waste management, spill prevention, and environmental monitoring to avoid or mitigate these impacts.

To ensure groundwater protection during drilling operations, Amoco stated it would use a freshwater-based, low-toxicity drilling fluid for the well. Monitoring of the drilling fluids for hydrogen ion concentration (pH), salinity, sodium absorption ratio, and toxicity would be performed on an ongoing basis and any necessary mitigative action would be taken to ensure compliance with existing regulations. Amoco committed to employing the latest water recycling technology to de-water the drilling cuttings and reduce the amount of waste generated.

Amoco stated its intent was to store drilling wastes prior to their disposal within the lease boundaries. Drilling waste as well as rain water and cement returns would be stored in a temporary pit prior to de-watering and the resulting solids stockpiled on the edge of the lease. Amoco intended, once it had been determined that the waste met the Board's disposal criteria, to dispose the drilling waste solids on lease and the waste liquids to the surrounding pasture lands. Amoco acknowledged that some species of wildlife are attracted to chemicals used in drilling muds and stated under questioning that, in order to avoid problems during either storage or disposal, it would install a fence around the site.

With respect to groundwater protection, it was Amoco's view that by reducing water demand through a recycling program, it could ensure minimal impact on groundwater quantity and by cementing all casing strings in the well over the full length, it could ensure no impact on groundwater quality. During questioning, Amoco admitted that it had not assessed the possibility of a hydraulic connection between a proposed water source well and Bob Creek. Amoco stated that it would commit to monitoring water quality in its water well on a regular basis, as well as to monitoring the levels of water in Bob Creek to ensure that there was no reduction in flow.

With regard to surface water contamination, Amoco acknowledged there was a concern with sedimentation and its effects on fisheries habitat. Amoco stated that during its road construction activities, all necessary precautions would be taken to prevent sediment from entering Bob Creek, including the use of a portable bridge to span Bob Creek at the single creek crossing.

8.2 Views of the Interveners

A number of area residents in support of the well noted that they believed oil and gas development could be carried out in a manner which was compatible with rural lifestyles and agricultural operations. However, the interveners opposed to the application, and particularly those living in proximity to the well, expressed significant concerns regarding the impacts from drilling even a single sour gas well within the Bob Creek valley. They noted that the area was largely unchanged since the advent of ranching in the region and supported a unique lifestyle. They were very concerned that the well represented a risk to their health, safety, and livestock. The interveners also noted that they used the area extensively for recreational purposes such as hunting, hiking, and camping. They expressed strong concerns that the qualities which made the area particularly attractive would be irrevocably lost both with the drilling of the initial well and certainly with a full-field development. The Peigan Nation expressed similar concerns regarding impacts on air and water quality, risk to Band members from an uncontrolled release and/or burning of well gases, and general disturbance from drilling activity.

8.2.1 Drilling Activity

Some concerns associated with the drilling of the well were raised. Of particular concern was the impact of increased noise, traffic, and dust from the proposed access road to the well site. Increased traffic in particular was cited as a potential safety risk as well as a source of disturbance. Concern was also raised with the presence of a relatively large work camp in a small community.

8.2.2 Blowout Prevention

The Hunter Creek Coalition expressed a number of concerns regarding Amoco's approach to optimizing the safety of its drilling program. The interveners had particular concerns with the use of grade X and used grade E drill pipe versus the use of grade SS-95, PRS-95, or new grade E drill

pipe. The Hunter Creek Coalition argued the latter should be utilized in the drilling of deep critical sour gas wells, as they provide a greater margin of safety. They believed that grade X and used grade E should only be used if other grades are not available.

The interveners expressed a general concern about Amoco's quality assurance program. Such a program was critical in their view to recognize and reduce human errors and improper procedures. They noted that in the last five years the oil and gas industry has had a significant cutback in staff and particularly senior experienced staff. They believed this lack of experience was evident in the Amoco submission and that Amoco had not set forth adequate assurances that it could meet the regulations, materials, and training requirements needed to drill a critical sour well. They noted the number of errors in the original application and subsequent changes as evidence of Amoco's inability to safely drill this well.

8.2.3 Emergency Response Plan

The Hunter Creek Coalition also disagreed with the estimated flow rates used by Amoco in designing its emergency response program. They felt that rates in the range of 3 200 000 m³/d for the Mississippian and 12 800 000 m³/d for the Devonian systems were more appropriate, two to four times as high as those estimated by Amoco. Assuming 28.4 and 28.2 per cent H₂S respectively, the corresponding H₂S release rates would be 10.6 m³/s and 41.8 m³/s, and result in an emergency planning zone radius greater than the 7.5 kilometres proposed by Amoco. They noted that the enlarged emergency planning zone should also identify areas where residents live, recreationalists might be present, and provide for traffic control on Highways No. 22, 940, 517, and the nearby Chaffin Creek road.

In discussing the proposed emergency paging system, several members of both the Whaleback and Hunter Creek Coalitions expressed scepticism with its effectiveness and resentment at the inconvenience and stress of having this safety requirement imposed on their family's daily lives.

The interveners stated that they were opposed to Amoco's request for a waiver of the dual ignition system. In their view, the dual ignition system was a requirement designed to ensure public safety. They stated that redundant ignition systems ensure ignition of the well can be achieved under emergency conditions. The interveners were also concerned that Amoco's position on ignition criteria was unclear and warned of possible confusion during an emergency which may result from the differing views on the need for ignition.

8.2.4 Emissions

Members of the Hunter Creek Coalition expressed concern, given the local weather patterns, as to how either flaring operations or an uncontrolled well flow might affect air quality and their health. They noted that clean air was one of the reasons the various families have chosen to reside in the Maycroft area.

The Hunter Creek Coalition indicated that both average and poor dispersion conditions were more likely to occur in a valley than in flat terrain. They noted that poor dispersion conditions would be particularly associated with periods of down-valley drainage flows. This type of flow is likely to be established at night and to persist through the early morning hours. They also noted additional concerns about low wind speed recirculating flows that can be established within the valley and which tend to bring a plume to the ground more quickly. Recirculating flow, they noted, can be reasonably

expected at the location of the well. The Hunter Creek Coalition recommended a much more detailed study of the dispersion meteorology of this area in order to establish the appropriate setback distances, as well as provide important insight into valley flows.

Of particular concern to the interveners was the potential impact of airborne emissions on their health, particularly to those two of the seven families which cited asthma problems, as well as potential risk to their livestock. A similar concern was raised with regards to other contaminants (section 8.2.5). Potential odours and other similar nuisances were also noted to be of concern, as was potential damage to vegetation from emissions. The issues raised were not specific, but rather represented a general fear of unknown impacts.

The interveners were also concerned with how impacts from emissions (or contaminants), if they did occur, could be documented. This was particularly true for their livestock, as the animals are free ranging and carcasses are often removed by scavengers before a cause of death can be determined. The interveners noted they were unsure what Amoco's policy was with respect to compensation for damage to livestock. They noted that even relatively small losses of stock would have a significant financial impact on individual ranches.

8.2.5 Contaminants

There were concerns expressed by a number of interveners regarding contaminants entering surface water and groundwater systems both from access road and bridge construction and from drilling activities.

The surface water concerns arose from a lack of information regarding specifications for road construction, specifically the kinds of cuts and fills that would be created and what stabilization measures would be employed to prevent sediment from entering Bob Creek during periods of high rainfall. The interveners felt that the lack of data impeded Amoco's ability to adequately address possible impacts on fisheries. They also felt that some level of assessment should have been done by Amoco on the potential of Bob Creek for spawning and impacts that sedimentation would have on that potential.

Groundwater contamination concerns were related to drilling the exploratory well, the water source well, and disposal of the drilling wastes at the completion of drilling. The interveners expressed concerns that Amoco had not provided significant evidence that impacts would not occur or what mitigative measures Amoco would take to ensure that contamination of groundwater resources would not occur.

8.3 Views of the Board

Given the evidence and Amoco's commitments, the Board believes the proposed well can be drilled in a safe and efficient manner and is consistent with or exceeds all current ERCB regulations. With regard to the short-term impacts of drilling activity, the Board notes that Amoco's drilling program appears to have been designed to mitigate most, if not all, of the concerns of the area residents. In general, the Board believes that the drilling program, as designed, represents a reasonable effort to reduce such impacts and is acceptable. The Board does have some concern with Amoco's estimate of the time to complete drilling, given the area's complex geology. If it was approved, Amoco would be expected to apprise both residents and the Board immediately of any significant delays in completing the well.

With regard to blowout prevention, the Board is willing to accept Amoco's contention that it fully understands the risks and requirements of drilling a critical sour well in Alberta and will ensure that the proposed drilling program is carried out in accordance with all requirements and recommended practices. While the Board shares the concerns of the interveners that there has been a loss of senior experienced personnel in the oil and gas industry, there is nothing in either the general industry safety record or in Amoco's record specifically which would suggest that the risk of loss of well control has increased as a result.

With regard to the pipe grade proposed by Amoco, the Board notes the application is consistent with current standards and the Board accepts that it is sufficient to safely drill the proposed exploratory well.

As to the emergency response plan, the Board notes that Amoco has already proposed an emergency response zone significantly larger than might otherwise be required. The Board supports this initiative since it offers a good way to communicate with residents in the area beyond the immediate area of impact and avoid unnecessary anxiety in the event of an upset in the drilling operation. Given that the emergency response zone is already calculated based on a hypothetical "worst-case scenario", the Board is not willing to require that Amoco expand its emergency response zone boundaries even further.

Regarding Amoco's request to waive the requirement for a dual ignition system, the Board believes that due to the multitude of access points into the Whaleback area and the level of use during the periods when the well would be drilled, it would be difficult to notify and instruct all transient users. The Board also has concerns with the effectiveness of Amoco's proposed pager notification system for this purpose. Therefore, the Board is not confident that evacuation is practical as the primary means of public safety and, on this basis, the Board would deny the request for a waiver of a dual ignition system for this well. The Board was also particularly concerned with the apparent lack of clarity in Amoco's proposed ignition criteria. Given the large number of transient users of the area, the Board can foresee few cases where Amoco would not carry out ignition. There should be no hesitation on a company's part to ignite an uncontrolled sour well when public safety may be compromised. The Board would expect Amoco to outline an explicit ignition criteria agreeable to the Board before drilling commences.

With regard to emissions, the Board accepts the evidence of both parties that the extreme local topography (Figure 2) and wind conditions will have a very strong bearing on dispersior. Based on probabilities, if the well were approved, the most likely scenario is that the well would be dry (62 per cent by Amoco's estimation) and emissions would not be an issue. By far, the second most likely scenario is that the well would be drilled and tested successfully, with emissions resulting from flaring but only during well clean-up and testing which are both reasonably short-term events. The evidence presented leads the Board to conclude, however, that if flaring operations were carried out without concern for specific meteorological conditions, then there is a reasonable risk that SO₂ impingement may occur. With proper care and monitoring, however, the Board does believe flaring can be carried out without risk to the health of residents, their livestock or to vegetation.

Should the well be approved and subsequently be successful, Amoco will be expected to meet AEP's Ambient Air Quality Guidelines during any flaring operations. The Board would require that in the event of an exceedance of these guidelines, Amoco would take the appropriate action, such as discontinuing flaring, reducing flaring rates, or mixing additional dilution gas into the flare stream.

The final, highly unlikely scenario, is that of an uncontrolled flow. Should loss of well control occur, Amoco has indicated it will evacuate all nearby residents immediately. Provided this action is carried out in timely and effective manner, only the residents or transients nearest to the well would be at risk and then primarily only if an unignited flow is allowed to continue for some time and no indoor shelter is available. If the well is approved, the Board will expect Amoco to satisfy it that the company has in place sufficient safeguards to adequately protect human health and safety during a blowout.

Under the blowout scenario, livestock in the immediate area would likely be at some risk, particularly if the well was not ignited. The Board does agree with the interveners that issues such as compensation for cattle loss could be dealt with prior to drilling of the well. Having such a process in place is advantageous to both parties. The Board notes the general basis for such compensation has been identified in guidelines adopted by the industry and is acceptable to the Board. The Board would expect Amoco, should the well be approved, to enter into discussions with area ranchers regarding a compensation process.

With regard to the potential impacts on surface water and groundwater systems from contaminants associated with construction and drilling operations, the Board believes that the control and monitoring measures committed to by Amoco at the hearing will adequately address those concerns.

9 PUBLIC CONSULTATION

9.1 Views of the Applicant

Amoco claimed that it had recognized at an early stage in preparing its application that the exploratory well application would generate a great deal of interest in a number of individuals and groups. It stated that as early as May of 1993, Amoco representatives were present in the Maycroft community and, in its view, information related to the proposal was readily available since that time. Amoco claimed the results of the public discussions reinforced its belief that the drilling of this exploratory well can proceed in a manner compatible with the area's present use.

The public consultation program adopted by Amoco had three distinct phases. The first phase involved initial consultation focusing on the single-well application with the primary aim to acquire the well licence, develop the emergency response plan, negotiate a suitable well site, and inform local residents, government departments and interest groups of Amoco's intentions.

Subsequent to initial contacts during the summer of 1993, Amoco assembled a community consultation team (the second phase) to explain the proposal in the area and to garner information on the residents' concerns. In addition, a public consultation expert was retained to provide assistance in reviewing Amoco's public consultation program and to augment that process. This program, which was carried out through late 1993/early 1994, culminated in at least six open house sessions intended to provide the public with general knowledge on certain aspects of the petroleum business and further information on the project. Over 150 personal discussions were also held. In addition to contacts with the community residents in the immediate vicinity of the proposed well location, presentations were made to groups in the broader Pincher Creek/Crowsnest region. First contact with the Peigan Nation occurred during the second phase in November 1993 and formal discussions with its members, including the chief, council, and elders, began the next month. Several subsequent meetings with the Peigan Nation occurred with at least one site visit conducted.

The third phase of the program involved ongoing consultation with the community, government, and interest groups in an effort to resolve issues raised during the earlier phases. Newsletters were also issued to describe the project and its status.

Amoco stated that it believed that the magnitude of its public consultation program was extraordinary for an exploratory well. In implementing its program, Amoco felt its staff demonstrated a willingness to listen to the concerns of stakeholders and to carry on a meaningful and open dialogue about the issues. In Amoco's view, reaching a resolution of any identified issue was the objective of its public consultation program. Amoco believed it had taken a leading role in the industry's relationship with the public.

Amoco claimed that during its public consultation program, it had gained considerable insight into the concerns of several groups and had altered its drilling and development programs in response to those concerns. The commitments to not build a gas processing plant in the Bob Creek valley, to provide air monitoring instruments, and to include innovative drilling techniques in possible future development scenarios were cited by Amoco as examples of accommodating resident concerns.

Amoco did, however, acknowledge that its relations with some of the residents had a "shaky start", and that some confusion and miscommunication in the early process was apparent. Since that time, Amoco believed it had implemented an extensive and sincere consultation process designed to overcome the initial difficulties. Amoco also believed it had met the expectations of IL 93-9 which states that the Board would expect, for Eastern Slopes developments, "that proponents would go well beyond the normal consultation process".

9.2 Views of the Interveners

Amoco's consultation process was given favourable comments by a number of interveners from the area. These interveners, some of whom live in the Maycroft community, stated that they generally appreciated the information Amoco supplied and the manner in which it was presented. These individuals and groups felt that a number of issues had been identified and resolved and that Amoco's plans for a community advisory committee would serve to monitor the drilling of the exploration well.

However, several interveners noted inadequacies in Amoco's attempts at public involvement. In particular, the Hunter Creek Coalition, which consists of seven local families, provided evidence which contradicted the views held by Amoco.

The members of the Hunter Creek Coalition stated that Amoco's public involvement program was flawed to the point where many of the concerns they had with the proposed development, such as human and animal health, were not dealt with effectively. These problems were the result of Amoco being unable to gain the trust of the residents, and because the consultation program adopted by Amoco did not enable local residents to be part of the decision-making process.

The Hunter Creek Coalition members stated that Amoco's initial attempts at public involvement throughout the summer of 1993 were disorganized, severely time consuming and did not establish any basis for continued dialogue. The interveners believed that they had been misled by Amoco into believing, at one point in the process, that a well licence had already been issued. In addition to feeling frustrated with the communication process adopted by Amoco, concerns were also raised about

apparent contradictions in the information that was distributed and discussed by Amoco. The Hunter Creek Coalition stated that Amoco's program was completely out of step with public consultation guidelines and principles of the Canadian petroleum industry.

At the hearing, there was discussion which focused on the "no-go" option (ie. to not drill the well in the area) and how that issue was handled during the several months of public consultation. Members of the Hunter Creek Coalition felt that since the option of not proceeding with the well was never allowed on the table by Amoco, dialogue on a number of issues related to the drilling and production of the well was made more difficult and several residents did not feel that open discussions on other possibilities or locations could be realized. They also stated that the option of Amoco slowing down the well application process was never offered to the residents. As a result, many of them experienced a sense of futility in participating in the process. The position of the Hunter Creek Coalition was also supported by members of the Whaleback Coalition.

9.3 Views of the Board

The ERCB has worked with the petroleum industry and many other groups for several years in an effort to further the concepts of public involvement and communication. The Board considers this aspect of the industry as being critical to the ongoing relations with the public. As stated in IL 89-4², "industry and government must have the involvement and cooperation of the public in order for anything else to work". The Board is confident that the oil and gas industry, as a whole, would concur with the view that much progress has been made and much confidence has been gained with the public over the last decade.

Although IL 93-9 was not issued when Amoco submitted its application for this well, the Board believes that Amoco should have been aware of the need for particularly effective public consultation in areas such as the Whaleback. In general, Amoco's program, while it eventually was quite extensive, was primarily reactive rather than proactive, and primarily advisory rather than consultative.

The Board notes that Amoco acknowledged at the hearing that its public involvement program got off to a poor start, but believed that the initiative was now on the right track and would continue to be effective if this application were to be approved. However, the Board also notes that some of the residents who would be directly affected by the development indicated that they have lost trust with Amoco.

In the Board's view, Amoco must accept much of the responsibility for this lack of trust. It is clear that many of the area residents were left unaware of the scope of Amoco's plans for the area until the late stages of the licensing process. The first contact did not occur until after surface access had been established and after Amoco had applied for a licence from the ERCB to drill the well. Whether intentional or not, the Board also accepts that at least some of the area residents were left, after speaking with the Amoco representatives, with the impression that Amoco had also received approval from the ERCB to drill the well.

The Board believes much of the poor relations between Amoco and segments of the local community originated with Amoco's original approach to discussing its project with local residents in Phase 1 of the public consultation process. The reluctance by Amoco to consider how drilling in the area might

² Informational Letter IL 89-4 - Public Involvement in the Development of Energy Resources

be avoided coupled with the fixed view of some interveners that no drilling should take place led to polarized positions.

It is evident that Amoco has now expended a significant amount of time, effort, and money to explain its project to people living in the region. Despite that effort, the Board is concerned with the lack of progress made by Amoco in re-establishing dialogue with many of the members of the community after the initial problems. The Board understands and accepts that effective public consultation in no way guarantees that the parties involved will reach consensus. Clearly, if there is no common ground between two viewpoints, then the best result one might expect from consultation is a better understanding of each other's position. In this instance, however, the Board is not convinced, based on the evidence provided, that the parties are truly committed in their efforts to re-establish dialogue. The Board believes that a renewed effort by both sides will be necessary to deal with at least some of the outstanding issues.

10 LAND USE

10.1 Views of the Applicant

In its application and at the hearing, Amoco stressed that the Whaleback Region had a long history of multiple use including ranching, hunting, recreation, and wildlife preservation, and that the proposed exploratory well was compatible with those other uses. The exploratory well and associated 2.6 km of new all-weather road would, in Amoco's view, have a negligible impact on either ranching or hunting and a minor impact on recreational and wildlife values. In particular, Amoco noted that there already existed 13.5 km of all-weather roads in the Whaleback area plus another 160 km of dirt trails, many of which were used by off-road vehicles. Amoco believed that the short length of additional road needed for the well, combined with its agreement to modify its own activities in order to reduce impacts (eg. no winter drilling, road closure, remote camp, etc.), would result in little or no disruption of the value of the area for other uses.

At the hearing, a significant amount of evidence was presented regarding whether Amoco's proposal was consistent with the Livingstone-Porcupine Hills Sub-Regional Integrated Resource Plan (IRP), a land-use management plan administered by AEP. Amoco noted that the decision of the Board, even if the Amoco proposal were at odds with the IRP, would not be bound by the land-use guidelines outlined in the IRP. This was due in part to the fact that the IRP has no force in law and in part to the intent of government that IRPs should serve only as land-use management guides. Amoco pointed to the issuance by AEP of access to the site through the MSL and LOC as further evidence that its proposal was consistent with the IRP.

Amoco noted that the IRP clearly distinguished between mineral exploration and mineral development. In its view, the applied-for well and road were clearly for exploration purposes and, given the proposed restrictions on access and timing, entirely consistent with the specific guidelines set out by the IRP for the Whaleback Ridge — Bob Creek Critical Wildlife Zone. It argued that its proposal also met the potentially more stringent wildlife protection criterion (i.e. no net wildlife habitat loss) set out by the IRP for development programs in the region.

Amoco also commented on the potential implications of Special Places 2000 to its proposal. Amoco stated that it agreed with the intent of the proposed Special Places 2000 policy in that certain areas representing each ecological zone in Alberta should be set aside for protection. Amoco noted that

while it accepted that the Whaleback represented an excellent example of the montane ecosystem, five areas of montane habitat in Alberta (including the Bob Creek Ecological Reserve within the Whaleback) now had some form of environmental protection. Since protection of representative montane areas already existed in other parts of the province, Amoco believed it was appropriate and consistent with the proposed Special Places 2000 policy to consider possible oil and gas development within the Whaleback in a broader, multiple-use context, balancing its oil and gas potential against its ecological values. The mineral lease review process and the issuance of the MSL and LOC were also claimed by Amoco to be evidence that the government did not wish development in the Whaleback to halt, pending implementation of the Special Places 2000 policy.

With regard to impacts on wildlife, Amoco recognized the value of the Whaleback area to a variety of wildlife species and, in particular as a wintering area for elk. Amoco stated that the Whaleback is one of the two most important and least disturbed elk wintering ranges in Alberta and the area could be described as the most productive ungulate habitat in the entire Eastern Slopes of Alberta.

Amoco stated that it did not believe the exploratory well would impact on either elk habitat or directly on the elk population in the Bob Creek valley. Amoco concluded that since the well site is in an area of improved pasture and this type of ground cover does not constitute winter feeding habitat for elk the proposed well will not result in a net loss of habitat for wintering elk. In addition, Amoco noted that the access road alignment follows a currently rutted and compacted dirt trail that already provides negligible habitat for the elk populations that frequent the area. No disruption of wintering elk populations was anticipated because of the seasonal timing constraints imposed on the drilling activity. Amoco noted that the surface leases were issued by AEP with the condition that, for wildlife management purposes, no activity was permitted between 1 December of any given year and 30 April of the following year.

At the hearing, experts for Amoco noted that there was limited knowledge available regarding elk movements in the summer, fall, and winter. If gas reserves are found and a development scenario is proposed, additional work would be required to fully understand these movements. However, for the proposed exploratory well, Amoco stated that impacts on elk would not be an issue if seasonal constraints and access mitigation are undertaken. Amoco also committed to fencing the well site to control wildlife attraction to the area, and to monitoring elk distribution during drilling, with the objective of adjusting the schedule of operations.

Amoco argued that the IRP requirement of no net loss of habitat applied primarily to elk, with other ungulate species that frequent the area having less importance. Under questioning, Amoco admitted that this interpretation of the IRP guideline was not sanctioned by AEP, nor had this concurrence been sought.

With regard to carnivore species, expert evidence by Amoco provided the view that neither cougars nor wolves, both present in the Whaleback area, would be impacted by short-term well drilling. For grizzly bears, Amoco believed that their occurrence in the area occupied by the proposed well and access road is very likely limited to sporadic short-term visits during the early spring to early summer period. Amoco did acknowledge, however, that if there are bears using the area during the drilling period, there will likely be displacement (i.e. effective habitat loss). Amoco also admitted that it cannot demonstrate there will be no net loss of either grizzly bear or black bear habitat since the information required to reach that conclusion is not currently available. Amoco suggested that one possible mitigative method which would allow industrial development to proceed would be to reduce the amount of hunting which is allowed.

10.2 Views of the Interveners

A number of residents living in the general area expressed support for Amoco's views that oil and gas development could be carried out in a manner which would preserve other land values including ranching, hunting, recreation, and wildlife resources. Some referenced their own acceptable experience in co-existing with the energy industry.

Several interveners, most notably the Hunter Creek Coalition, the Whaleback Coalition, the Federation of Alberta Naturalists, and the Alberta Fish and Game Association as well as a number of individuals, however, disagreed strongly with the view that even the single exploratory well could be drilled without an unacceptable reduction in land-use values in the Whaleback Ridge — Bob Creek valley.

The Whaleback Coalition noted that the 1984 Eastern Slopes policy, which provides direction for the IRPs, sets out a number of goals for Eastern Slopes management. These goals included wildlife protection, recreational opportunities, management of rangelands, protection of significant ecological and archaeological values, and exploration and development of mineral resources. They noted that with the exception of mineral resource development, the area already accommodated the remaining goals. Unlike Amoco, however, the interveners did not accept that oil and gas development could be carried out in a manner which preserved other land-use values.

The interveners emphasized the lack of road development in the area. The lack of access in particular had helped in preserving the region's wilderness, recreational, and ecological values. The Hunter Creek Coalition noted how their industry, that is raising cattle, had been carried out for several decades without harming the area's other values, such as its unique ecology, and noted that they viewed their role as stewards of the lands.

With regard to the role of the IRP in Board decisions, both the Hunter Creek Coalition and the Whaleback Coalition argued that the Board must take the IRP into consideration. Furthermore, they stated that the IRP process clearly recognized that not all activities could take place in one area and that the IRP offered guidance to the Board as to how priorities should be determined in the case of conflicting uses. In this instance, they argued that the IRP clearly intended that protection of the surface values of the area was to be given precedence over development of its subsurface values. In particular, they noted that the IRP required that oil and gas development could only be carried out in a manner which resulted in no net loss of wildlife habitat, no disruption of wildlife populations, and no loss of ecological and recreational values found in the area. They noted that such a prescription was not generic to the Eastern Slopes, but rather was specific to the Bob Creek area. This, they argued, clearly demonstrated that the IRP process intended oil and gas development to proceed in some but not all areas of the Eastern Slopes. Amoco's application, they believed, could not be carried out within the confines of the IRP, particularly if the project moved beyond a single exploratory well.

The interveners noted that, although Amoco had applied only for a single exploratory well, they believed that the road to the well would greatly increase public access, and the well, if successful, would become a component of Amoco's proposed development. Therefore, it should, in their view, meet the requirements of no net wildlife habitat loss and no disruption of populations set out in the IRP for mineral development, requirements which they argued the well and access road clearly would not meet. The interveners also doubted Amoco's ability to meet the requirements set out in the IRP for even an exploratory well. For example, they questioned Amoco's ability to control access once the road had been constructed. The associated increased access would, they claimed, result in not

only wildlife impacts, including increased poaching, but also in cattle rustling and random or accidental shooting of cattle.

In addition to impacts on wildlife and possibly ranching, the interveners opposed to the well all argued that industrial development in the Bob Creek valley would significantly reduce its ecological and recreational values. In particular, they noted that the exploratory well would represent the first step in a complex system of roads and well pads into an area which was fundamentally unchanged from the time of the first white settler into Alberta. For the Whaleback Coalition, this represented a complete loss of the wilderness value of Bob Creek and the Whaleback Ridge. Also at risk, they argued, was the ecological integrity of the area. The Whaleback, they stated, was made up of a complex and very site-specific assemblage of plants and animals. The loss of any species, in their view, reduced the overall ecological value of the area and could irreversibly destroy the area's unique ecology. A number of factors associated with industrial development, including direct disturbance as well as less direct impacts associated with emissions, contaminants, habitat displacement, etc., could all have an impact. The Whaleback Coalition stated that there is a real economic value in sparing the Whaleback from industrial development due to the increasing rarity of wild country and unique landscapes such as the Whaleback.

For the Peigan Nation, the well was also considered a potential risk to their traditional uses of the area.

The interveners opposed to the well also disagreed strongly with Amoco's view of the importance of the Whaleback within the Special Places 2000 program. They argued that, with the exception of a small area known as Ya-Ha-Tinda in west-central Alberta, the remaining montane ecoregions of the province had been heavily disturbed by industrial and recreational developments. The Whaleback, in their view, clearly represented the largest and least disturbed example of the montane ecosystem in Canada. As a result, they believed that the Whaleback was a prime candidate site for protection under the Special Places 2000 program. At a minimum, they argued, the Board should not make a decision which would pre-empt the potential for the Whaleback to be included within the Special Places 2000 program.

Several individual interventions offered comments on the effect the proposed well may have on wildlife. Dr. Sheppard stated that, in interpreting the no net loss principle, one needs to consider individual target species. In this case, Amoco had not provided a site-specific inventory; thus, the information required to determine the effects of the road and well site on wildlife habitat was not available. He also took exception to Amoco's conclusion that elk are the only species in this area to which the regulatory requirement of no net loss need be applied.

Mr. Lynch-Staunton, in support of Amoco's application, stated that there is a misconception that wildlife populations in the area are either fragile or in short supply. He went on to say that, as a rancher, he believed that there are too many elk and deer in the area and they have proven their ability to adapt to human activity. Mrs. Aris, citing her extensive professional contact with wellsites and pipeline areas, stated that disruption to the area is minimal, wildlife is abundant, and elk and deer use of seeded areas is extensive.

Wildlife experts for the Hunter Creek Coalition concluded that the exploratory well will indeed result in an appreciable net loss of wildlife habitat in that effective use will be altered. It was suggested that elk could be considered as a pivotal indicator species, since maintenance of a viable elk population would be indicative of the general condition of the ecosystem. Other species identified as being

potentially affected by the proposal included bears, wolves, wolverines, and several birds such as eagles and woodpeckers.

The Whaleback Coalition stated that the proposed exploration well and road do not comply with the IRP guidelines for wildlife in that they will result in a direct loss of montane wildlife habitat and disrupt elk and grizzly bear populations. It was suggested that the impacts associated with the drilling of the exploratory well will extend far beyond the physical footprint of the access road and wellsite surface location.

The Peigan Nation stated that loss of wildlife habitat and emissions of H_2S and SO_2 could directly impede its ability to exercise the right to hunt and gather plants in the Whaleback area. An expert witness for the Peigan Nation suggested that, in considering the concept of no net loss of habitat, it is not a matter of an acre for acre replacement of something, but rather an evaluation of habitat functions and values. He also warned that some elk are very sensitive to disturbance, a response which depends on their past experiences, among other factors, and that the winter period would be the most critical for elk. The other species which the Peigan Nation suggested could be affected was the grizzly bear.

Some opposing interveners recommended that the application under consideration should be denied, that Amoco's investment in the mineral and surface leases should be returned, and that the leases should be recovered by the government and not be re-issued. These interveners suggested that this would constitute a "win/win" situation in that not only would the citizens of the province benefit from preservation of the unique ecological values of the area, the company would also benefit due to a significant public image boost related to its environmental consciousness, and also from probable increased sales of renewable energy devices (solar panels) manufactured by its sister company. Additionally, future generations would benefit from the retention of a "benchmark" or "reference library" montane ecosystem that would otherwise disappear. Moreover, any underlying hydrocarbon reserves would remain available to future generations if a critical need arises.

10.3 Views of the Board

The Board accepts the views presented that the Whaleback area has had a long history of multiple and highly-valued use for ranching, hunting, recreation, and wildlife. The area also appears to have significant value for native traditional uses. Although various forms of disturbance have occurred, such as seeding of pasture areas with non-native species and the development of off-road vehicle trails, the Board believes that the overall ecological integrity of the area has also generally been preserved. The question which the Board must address is whether the proposed development of the 10-18 well can be carried out in a manner which does not reduce the existing land-use values so significantly that the overall public interest is compromised.

One component of the Board's assessment of this issue has been the land-use guidelines adopted for the area in the IRP. The Board is of the view that its ultimate discretion is not fettered by the guidelines set out in the IRP and notes that the IRP clearly states that it is to be used only as a management guide. At the same time, the Board does believe that it should be cognizant of the IRP in reaching its decisions and can draw from the document valuable insights and direction into the Provincial Government's land-use goals.

The Board notes that the IRP does, as stated by the interveners opposed to the well, set out a series of priorities for resource protection in the region. Furthermore, the IRP appears to give priority to the protection of ecological and wildlife values. As argued by the Whaleback Coalition, this higher level

of protection also appears to be echoed in the no net loss of habitat concept and the requirement of no loss of ecological values. The Board does not accept Amoco's argument that these tests need only be applied during the development stage. The Board believes that it would not be reasonable to prevent development activity which resulted in either habitat loss or loss of ecological values but allow exploratory activity which had the same effect.

Based on the information supplied at the hearing, the Board is not convinced, despite the efforts of Amoco to reduce drilling and construction impacts, that the requirements of the IRP, as the Board interprets that document, can be met with the applied-for well location and routing of the access road. The road extension in particular would appear, without some form of additional mitigation, to be totally inconsistent with the intent of the IRP. The Board believes that there would be at least a modest net loss of functional wildlife habitat as a result of the construction and operation of the access road and drilling site. This effect would be magnified significantly under the various development scenarios.

The Board also does not accept the narrow interpretation of no net loss of wildlife habitat offered by Amoco, although it acknowledges that no clear definition is offered in the IRP from which the guideline is taken. The Board believes that it is much more reasonable to assume that "no net habitat loss" refers to functional habitat units and would include the impacts of disturbance, harassment, and hunting. The Board also does not believe that it is reasonable to apply this principle only to elk, even given their high local importance. The Board doubts that the wildlife management intent of the IRP was single-species oriented.

It also appears that of the wildlife species utilizing Bob Creek valley, it may be elk in particular which are most sensitive due to the limited availability of over-wintering habitat, coupled with the area's high population density and the high recreational value (i.e. for hunting) of the species. At the very least, elk may provide a reasonable indication of ecosystem integrity. However, the Board also accepts the view of the Whaleback Coalition that the Whaleback region contains a unique assemblage of other plants and animals, with many of them potentially rare and/or sensitive to disturbance. The Board recognizes that it is not sufficient to consider only a single species (in this case, a large, wide-ranging mammal) and based on that determine that ecosystem integrity can be maintained.

The Board does accept Amoco's position that development of the exploratory well, provided access can be controlled, can likely be carried out with limited risk to area wildlife populations. However, the location of the well within the centre of Bob Creek valley does appear to maximize the potential risks, particularly to the elk population. This fact, when coupled with the lack of data for other species and the high value of the Bob Creek valley for elk, gives the Board concern. The Board also has ongoing concerns regarding Amoco's assertion that access, particularly during winter, can be controlled. The Board received considerable evidence at the hearing that road access represents the most significant threat to wildlife. It was also suggested that access control, once the road is in place, would be at best difficult to restrict and enforce. While the Board believes Amoco's suggestion to limit access during the drilling program would avoid negative impacts temporarily, it believes a more permanent long-term access plan needs to be developed in advance of additional proposals for the area if permanent damage to wildlife populations is to be avoided. Such plans should be supported by appropriate wildlife inventories, specific to the type of operation, designed to suit the wildlife management objectives of the area, and should have the support of wildlife officials charged with managing the area. The Board also believes some consideration should be given to restrictions to hunting or regulated controls to prevent access should energy development proceed.

With regard to the Special Places 2000 program, the Board notes the commitment by government to the initiative and expects implementation of the program will move forward in a timely fashion. The Board concurs with the views expressed that the Whaleback area is a valuable representation of an ecologically unique portion of the province. The Board accepts that it is the largest such area in the province still remaining in a relatively undisturbed condition and, as such, would likely be a prime candidate for consideration by the Special Places 2000 program. Furthermore, the Board believes that allowing oil and gas development in the Whaleback region prior to allowing the Special Places 2000 program to run its course would likely compromise its relative value to the program.

The Board is of the view that the Special Places 2000 initiative has been designed to specifically identify and evaluate unique lands such as the Whaleback within a broader provincial context. The Board believes that the Special Places 2000 process is the logical forum in which to debate the overall public value of the Whaleback from the provincial perspective. In the absence of such an evaluation having been performed at this time, the Board does not believe it would be in the public interest for it to approve an application for energy development that may, in turn, significantly compromise a scarce or unique combination of ecological values. This view is compounded by the uncertainty the Board has that Amoco has justified this proposed 10-18 location as the only one suitable for its needs at this time.

Once a decision has been made under the Special Places 2000 program for the region, the Board would be willing to reconsider an application by Amoco under the terms defined for the area. Given the reputed size of the structural anomaly, the Board certainly believes it still may be in the public interest, after the concerns raised in this decision are addressed, to evaluate at some future time the resource potential in the region. The Board would still need to be convinced that gas development could be carried out in a manner which did not unacceptably compromise the integrity of the Whaleback ecosystem or the surface values of the region.

11 DECISION RESPECTING APPLICATION NO. 931598

The Board has carefully considered all the evidence pertaining to this application. Based upon that evidence, the Board accepts that Amoco has established the need to drill an exploratory well. The Board also found that the proposed drilling and emergency response plan for the well generally meets all provincial guidelines and that the well can be drilled without undue risk to the public, although the details of the emergency response plan would have to be worked out to the Board's satisfaction with regards to notification, evacuation, and ignition. Further, the Board can accept that, from the company's position, it has attempted to select a drilling location which will optimize its probability of establishing whether hydrocarbons in commercial quantities exist within those mineral leases.

Although such an exploratory well would clearly be in Amoco's best interest, the Board must be satisfied that the proposed well would be in the overall public interest of the Province. The Board is charged under section 2.1 of the Energy Resources Conservation Act with considering "...whether the project is in the public interest, having regard to the social and economic effects of the project and the effects of the project on the environment". It is this test of public interest which must be met before a project can be deemed acceptable by the Board.

In the Board's view, the most significant issue is whether the benefit of the information which would be supplied by the exploratory well outweighs the environmental, social, and economic costs associated with such a development within the Whaleback. In carrying out this analysis, the Board

took note of the planning objectives for the area set out by the Provincial Government in the IRP. From the evidence, the Board is convinced that the exploratory well is not consistent with those management goals, particularly unless access to the area can be controlled in the long term. On the basis of the evidence, the Board found it difficult to accept that Amoco can successfully develop an all-weather road into the Bob Creek valley without causing a significant long-term risk of permanently increasing public access and thereby having an unacceptable impact on wildlife and other values of the area. The Board believes a sound access control plan, consistent with the Integrated Resource Plan for the area, should be developed before any disturbance is allowed to take place.

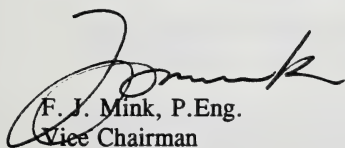
The Board also believes that the Whaleback area represents a truly unique and valuable Alberta ecosystem with extremely high recreational, aesthetic, and wildlife values. It accepts the position of some interveners that the area is a primary candidate for protection under the provincial Special Places 2000 program. A significant component of that value lies in the relatively large and contiguous nature of the Whaleback Ridge ecosystem and the very limited disturbance which has occurred. The Board believes that for it to approve the Amoco application at this time could significantly affect the area's surface values before the Special Places 2000 program has had an opportunity to evaluate the importance of the area in a provincial context.

The Board firmly believes that the exploration for and development of Alberta's natural gas resources is a key component in the economic well-being of the Province. The Board acknowledges that the natural gas prospects in the Whaleback area may be promising and evaluation of that prospect may eventually be in the long-term public interest of Alberta. It is the Board's view, however, that the current application is deficient, that further information is required to establish if the 10-18 well site is in the most suitable location and that it should not be approved until more definitive land-use policies are prepared for the area. The Board is prepared to consider a new application upon clarification of the land-use status of the area and subject to the submission of further evidence on the issues identified in this report.

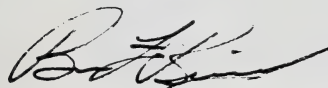
Application No. 931598 is denied.

DATED at Calgary, Alberta on 6 September 1994.


ENERGY RESOURCES CONSERVATION BOARD



F. J. Mink, P.Eng.
Vice Chairman



B. F. Bietz, Ph.D., P.Biol.
Board Member



R. G. Evans, P.Eng.
Board Member

ENERGY RESOURCES CONSERVATION BOARD

Calgary, Alberta

**APPLICATION FOR A WELL LICENCE
PORCUPINE HILLS-WHALEBACK RIDGE AREA
AMOCO CANADA PETROLEUM COMPANY LTD.**

**Memorandum of Decision
Pre-Hearing Meeting
Application No. 931598**

1 INTRODUCTION

Amoco Canada Petroleum Company Ltd. (Amoco) has applied to the Energy Resources Conservation Board (the Board) for a well licence for a well proposed to be drilled on a surface location in Lsd 9-18-11-2 W5M. The well would be known as AMOCO HUNTER CREEK 10-18-11-2 and would be for the purpose of obtaining production from the Mississippian System. The well would be located in an area of south-western Alberta known as the Whaleback Ridge.

The Board was aware that a number of individuals and interest groups had concerns about the drilling of a well in this area and were requesting that a public hearing be held to address the application. To ensure all parties had an opportunity to set out their position, the Board convened a pre-hearing meeting to receive submissions respecting issues related to the application. The meeting was held at the offices of the Board on 14 December 1993. The Board members presiding at the meeting were J. P. Prince, Ph.D., R. G. Evans, P.Eng. and N. G. Berndtsson, P.Eng. The following major topics were discussed:

1. the location of the hearing,
2. the timing of the hearing,
3. the scope of the hearing, and
4. funding for local interveners.

The names of the participants who registered at the meeting are shown on the attached list.

2 VIEWS OF THE APPLICANT

Amoco stated it would defer to the wishes of the Board and local area residents respecting the location of the hearing. Amoco submitted that the hearing should commence no later than 28 February 1994.

Amoco submitted that the hearing should focus on the proposed well and not be expanded in scope to speculate on future applications since the results of the proposed well would be of paramount importance in determining what development might be proposed in the future. Amoco believed that it had already addressed a much broader scenario than normally required for an exploration well. This information, in Amoco's opinion, should be sufficient to support the application.

Respecting funding, Amoco submitted that dealing with any funding applications at a pre-hearing meeting in January, with time allotted to assess these applications prior to any hearing, would be appropriate.

3 VIEWS OF THE INTERVENERS

The interest groups and local residents represented by Mr. Harvey Locke suggested that the hearing should be held no earlier than May of 1994 in order not to interfere with local calving operations and to allow sufficient time to review the material submitted by Amoco and properly prepare for the hearing.

Mr. Locke submitted that the Maycroft Community Hall would be the most appropriate venue to hold the hearing to allow the attendance and participation of local area residents. Mr. Locke also submitted that it was their intention to file an application for funding for preparation of their submission. He also stated that his clients would want staff from Alberta Environment Protection (AEP) to be available to testify at the hearing, and, if necessary, he would wish the Board to compel their attendance.

Respecting the scope of the hearing, Mr. Locke submitted that the Whaleback Ridge area is environmentally sensitive and ecologically important, both locally and provincially. Given this, the initial question to be addressed at the hearing was whether any new development of the area should occur at all. If development is to occur then the entire potential development must be assessed, not just a single well.

Mr. McCall submitted that to allow time to prepare for the hearing, a date in May was the earliest the hearing should be convened and the venue could be Maycroft. Respecting scope, Mr. McCall stated that the entire potential development should be addressed. Further, the hearing should consider topics such as potential effects on health, traffic, and property values as well as environmental matters.

The Rocky Mountain Ecosystem Coalition (RMEC) supported a May date for the hearing. It also supported Maycroft as a hearing venue but also proposed a parallel process be held in another location, such as Calgary. RMEC also requested that the Board call for the attendance of staff from AEP to address wildlife issues at the hearing. RMEC argued that the scope of the hearing should include the full field development and also address possible cumulative effects of the proposed development.

The Federation of Alberta Naturalists (FAN) supported a May hearing date at the earliest and Maycroft for a hearing location. FAN submitted that the issue of whether development should occur at all must be addressed. If development is to proceed, the scope should include the broad development and an environmental impact assessment. FAN also supported the appearance of provincial employees at the hearing.

The Peigan Nation (the Peigans) supported the May date for the hearing. Although they did not oppose Maycroft as a hearing location, Pincher Creek would be more convenient for them. The Peigans believe the scope of the hearing should be broad in nature and shared the environmental concerns expressed by other interveners. As well, important socio-economic issues should be discussed, including impact on lands the Peigans consider to be traditional lands, sacred sites, and possibly reserve lands.

The Surface Rights Federation supported the position of addressing the development of the entire gas play and not just a single well licence application.

4 VIEWS OF THE BOARD

Considering the remarks of the applicant, the intervening parties and its own schedule, the Board believes that a hearing commencing on 25 April 1994 should allow sufficient time for the interveners to prepare. The corresponding filing date for submissions will be set for 15 April 1994. The Board notes the general support of the participants for the hearing to be held in Maycroft, and accepts that location.

Respecting requests for advance funding, the Board will entertain submissions filed no later than 24 January 1994. If a meeting is required to address these submissions it will be held at the offices of the Board on 27 January 1994, commencing at 9:00 a.m. While not limiting participation the Board expects that only counsel or other persons representing groups or individuals would need to appear at this meeting.

With respect to the scope of the hearing, some guidance is available from IL 93-9, which was issued at the close of the pre-hearing meeting. The contents of the IL had been previously discussed with the applicant, as well as with other companies active in the region.

IL 93-9 deals with potential drilling in the southern portion of the Eastern Slopes. This area has been assessed by the provincial integrated resource planning (IRP) process, which allows for public participation, and by an internal government review process under the Crown Mineral Disposition Review Committee (CMDRC). These processes, both of which include consideration of environmental sensitivities, concluded that the area should not be precluded from potential oil and gas development without site-specific assessment under the provinces' regulatory framework. It is the ERCB's legislated responsibility to provide that site-specific assessment in this case.

The Board normally attempts to determine whether new drilling is in the public interest by comparing the potential value to society of successful development with the potential costs to society imposed by that development. Those costs may include, among other things, effects on local landowners, as well as commercial, social and environmental impacts -- in general, all identifiable adverse effects attributable to the project. There are uncertainties on both sides of the equation, including, for example, the following: the presence of hydrocarbons is never certain until wells have been drilled; the social impact and the impact on the environment may depend on the scale of development and may or may not be mitigable; and the costs associated with development are sometimes difficult to quantify.

The southern portion of the Eastern Slopes is viewed by some members of the public as an important, in some areas untouched, regional ecosystem. Consequently, the Board decided to augment its normal procedures by encouraging companies to adopt a more co-ordinated approach to planning oil and gas development than has been the usual approach. IL 93-9 sets out the Board's expectations for development proposals in the area. The IL is intended to allow sufficient flexibility to accommodate the wide range of existing settings in the region, from relatively intense development to pristine, as yet untouched wildlands.

In areas with no previous energy exploration, the Board recognizes the inherent difficulty in projecting full field development at the stage of planning the first well or even initial delineating wells. The first exploratory well may be unsuccessful, thus refocusing or possibly terminating activity in that region. Or the first well may be extremely promising, suggesting that a detailed, extensive development plan is reasonable and desirable. Or it might be an unfortunate in-between situation, requiring subsequent

judgement with respect to the next well. So the Board has chosen to encourage a sequential approach to delineating and planning development, as described in the IL, that is intended to ensure the planning effort and information requirements are appropriate for the circumstances.

In the case at hand, the proposed site "is on Crown land in an area of improved pasture used by the leaseholder as a spring and fall holding area for cattle" (Application, Tab 1, page 1). At the same time, the valley where the well is proposed may be an important component of the regional ecosystem. The Board would want to be sure that the well would not alter that ecosystem adversely and irretrievably. The question bearing on the scope of the hearing is what nature and scale of information is necessary for such decisions to be reliably made.

Board staff felt, because of the area's potential sensitivity, some aspects of the decision might require more information than is usually provided in an application for a single well. Amoco's response identified three scenarios and went into some detail regarding the assumed development and environmental implications of those scenarios. The scenarios were based on a number of assumptions, some of which would be tested by the drilling of the first well. There is a considerable degree of uncertainty about the potential nature and direction of development at this time.

The application exemplifies a situation contemplated by the Board when it developed IL 93-9: one where some interveners request the broadest possible hearing to make a wide-ranging case against development, while the applicant requests a hearing limited to consideration of one well, the applied-for exploratory well, on grounds that everything else is speculative and would provide little basis for decision at a hearing. In the case at hand, the Board believes the uncertainty associated with early exploration means that attempting to define the complete development, as well as its associated environmental impact, would be, at best, speculative and inefficient and, at worst, simply not possible.

The Board believes it understands the concerns prompting some interveners to suggest this should be a hearing to determine whether any new development is acceptable. Nevertheless, the form of that question the Board must contend with at this hearing is whether or not this specific well and associated infrastructure would cause adverse effects sufficient to justify not allowing it to go ahead.

Therefore, the Board has decided that the hearing should focus largely on the applied-for well and its effects. The Board will be asking interveners to address concerns about the impacts of this well, and to assist it in determining whether or not the potential adverse effects of this well are grounds to deny it — in Mr. Locke's words, whether "the first cut" is really too deep. Some leeway will be allowed for the interveners to address broader issues within reasonable limits. However, the Board notes any future applications would be subject to the Board's scrutiny, as well as that of the interveners, and could give rise to future public proceedings. The Board sees little merit in discussing concerns related to future development that may not occur and, in any case, would be subject to the full review process.

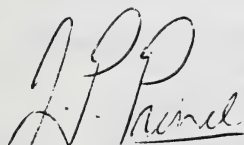
If the first well is approved and turns out to be unsuccessful, that may end the process. Should this well be approved, drilled, and successful in locating hydrocarbons, subsequent applications would require an appropriately greater emphasis on potential environmental impacts, and detailed planning. The application review process associated with each subsequent step will provide further opportunity for interested parties to participate. The Board is confident that this procedure will effectively guard against the possibility of — again using Mr. Locke's expressive language -- "death by a thousand cuts".

Although the Board is conveying by this decision its interest in focusing on the specific application, participants should recognize that the Board does not intend to limit the scope to the very narrow issues relating only to drilling of the well. The applicant will also be asked to address possible production options. For example, if the well were approved and successfully drilled, but further drilling was later denied, the well might have to be produced on its own. With that possibility in mind, the applicant should be prepared to address the impacts of whatever facilities would be needed. The Board notes that this process puts Amoco at risk in ensuring there is sufficient information before the Board to enable it to make a decision. Amoco is also at risk to the extent that investment made in the early stages of drilling may generate a limited return if later environmental or other issues cause the Board to decide full development is not acceptable. Should this well be approved and drilled, the applicant would be well advised to plan to identify the full development requirements as early as possible.

The Board notes the requests to have representatives of Alberta Environmental Protection appear at the hearing and will advise the department of these requests. However, it is not clear to the Board that the potential contribution of those representatives to the decision the Board must make justifies requiring witnesses to appear, should they not wish to do so voluntarily.

DATED at Calgary, Alberta on 31 December 1993.

ENERGY RESOURCES CONSERVATION BOARD



J. P. Prince, Ph.D.

Vice Chairman

* R. G. Evans, P.Eng.
Board Member

* N. G. Berndtsson, P.Eng.
Board Member

* Messrs. Evans and Berndtsson were unavailable for signature of this memorandum but concur with its contents.

THOSE WHO APPEARED AT THE PRE-HEARING MEETING

Principals and Representatives (Abbreviations Used in Report)

Representatives

Amoco Canada Petroleum Company Ltd.

F. R. Foran
D. G. Arnason

Federation of Alberta Naturalists

Maryhelen Posey

Hunter Creek Coalition

H. Locke

The Whaleback Coalition

H. Locke

Miler and Diane McCall

M. McCall

Rocky Mountain Ecosystem Coalition

M. Sawyer

Piegan Nation

L. Mandell

Surface Rights Federation

H. Gardener

Energy Resources Conservation Board

M. J. Bruni
R. Creasey, P. Biol.
N. F. Lord

Informational Letter

IL 93-9

To: All Oil and Gas Operators

13 December 1993

OIL AND GAS DEVELOPMENTS EASTERN SLOPES (SOUTHERN PORTION)

EXECUTIVE SUMMARY

This informational letter (IL) was developed by the Energy Resources Conservation Board (ERCB) to confirm to all oil and gas operators the information required for developments along the southern portions of Alberta's Eastern Slopes. These requirements have already been communicated by ERCB staff directly to some companies with active development plans in this region. This IL is intended to ensure a common understanding of ERCB requirements exists among any other potential operators in this area, as well as other potentially affected parties.

The key points of the IL are:

- Any company intending to develop a project in the region is expected to carry out a thorough and effective public consultation program consistent with the sensitivity of the area proposed for development. The program should document both issues identified and resolved.
- At each stage of development (i.e. initial pool delineation, subsequent delineation, pool development) a potential operator will provide, in as much detail as practical, its best estimate of the overall extent of development. This is required in order to avoid piecemeal proposals and to ensure that the overall scope and potential impacts of the development, if permitted, are clearly understood.
- Applicants will be required to carry out environmental assessments for each proposed development stage. These environmental assessments will be of sufficient detail to allow the Board to determine whether the project's economic benefits and mitigation programs sufficiently outweigh any remaining social and environmental costs (i.e. that the project is in the overall public interest). The level of detail expected in any environmental assessment will vary with project stage, the ultimate scope of development, the relative sensitivity of the proposed development area, and the extent of other existing and potential developments (both energy and non-energy related) in the area.
- Operators proposing developments within this region are expected to consolidate their plans and activities with other operators to the greatest degree practical wherever this may reduce area impacts.

The ERCB is of the view that this approach to the planning of new developments within the Alberta Eastern Slopes will be of benefit to operators, directly-affected parties, and to the general public. Ultimately, it is expected that this program of public consultation, project pre-planning, environmental assessment, and coordination of corporate activities will significantly help to ensure that, should developments proceed with the Eastern Slopes, they will occur in a manner which best meets the interests of all Albertans.

INTRODUCTION

The Eastern Slopes region of Alberta, particularly from Highway #1 south to the United States border (Figure 1) has the potential for significant oil and gas exploration, development, and production activity. At the outset, it must be acknowledged that the environmental sensitivities of localized areas within the region defined by Figure 1 are highly variable. As a general guideline this IL applies to undeveloped or minimally-developed areas; however, circumstances may exist such that the expectations are appropriate for certain developed areas also. Initial consultation with ERCB staff and other stakeholders would assist in determining the applicability of this IL to a given area.

The Board recognizes that this IL presents a broader regulatory approach to oil and gas development in the Eastern Slopes which is still evolving. For this reason the ERCB considers this IL as an interim document, and is prepared to revise it as circumstances warrant.

BACKGROUND

Following the posting and subsequent sale of mineral leases for several large parcels of land in the southern portion of the Eastern Slopes, various interest groups and individuals raised concerns about the possible impacts of the potential development. These mineral leases were reviewed by the Crown Mineral Disposition Review Committee (CMDRC) prior to posting and sale by the Alberta Department of Energy (AE).

The CMDRC is chaired by the Land Reclamation Division of Alberta Environmental Protection (AEP) and includes representation or available advice from all departments, agencies and boards which have a direct interest in land use, resource development and utilization, and protection of the environment and the natural resources of the province. It reviews each parcel requested for posting to determine whether surface access is possible and, if so, whether access restrictions are necessary. Surface access may be unrestricted (except for specific requirements under existing legislation), subject to additional restrictions such as increased setbacks from valley breaks, limited to specific time frames to protect wildlife, or may be prohibited. This committee follows the resource management policies and guidelines contained in the cabinet-approved Integrated Resource Plans (IRPs) and forwards its requirements to AE, also a CMDRC member, for inclusion in the postings.

The ERCB is responsible for the licensing of oil and gas wells in Alberta. As a part of that responsibility, the ERCB must ensure that exploration and development drilling, as well as subsequent production operations in a given area, are appropriate and in the public interest and that environmental impacts are acceptable.

GENERAL EXPECTATIONS

With this as background, the ERCB is aware that many forms of industrial and recreational development have already occurred throughout the Eastern Slopes region. Further, the Eastern Slopes

Policy and related IRPs provide a framework for land use planning and management. The ERCB believes that it does not have the mandate to assess the appropriateness of the Eastern Slopes Policy or IRPs, but does have the obligation to assess the impacts of a proposed energy development and the appropriateness of it for the affected area in light of that policy. The Board may conclude for instance, that while development may be permissible under an IRP, the proposed development may not be appropriate for the specific area. The ERCB therefore believes that the public interest in the Eastern Slopes region presents a need for a somewhat broader regulatory review than may be typical in more developed areas of the province.

To this end the ERCB has four main areas for which it has certain expectations, as follows:

- **Public Consultation** – Proponents of energy developments in this region are expected to have early and open consultation with interested parties to identify stakeholders and specific issues, baseline environmental data and further data requirements, and attempt to resolve as many issues as possible. Initial consultation with ERCB and AEP staff would assist in scoping out issues and stakeholders. Applications are to be accompanied by a full description of the consultation process, issues identified, issues resolved, and status of remaining issues including research needs.

The consultation process should provide for a focusing of issues and resolution of as many of those issues as possible. ERCB staff are prepared to assist in the event cooperative discussions are not achieved but would expect the proponents of the development to do the necessary ground work. Because of the potential sensitivity of the area it is expected that proponents would go well beyond the normal consultation process. Whereas public hearings may be necessary, the Board believes mutual resolution of the issues outside the hearing process remains the preferred route, as it may provide for a broader scope for resolution than does the hearing process.

A multi-stakeholder committee known as the Eastern Slopes Environment and Energy (ESEE) Committee has been established, intended to foster communication on oil and gas development issues in the Eastern Slopes. Represented on the committee are member companies of the Canadian Association of Petroleum Producers (CAPP) that have an active interest in the region, AEP, AE, ERCB staff, and several environmental interest groups. The Board supports this process and encourages on-going dialogue amongst all stakeholders.

- **Development Plans** – The ERCB expects applications such as well licences (initially) and other surface disturbances such as pipelines and facilities (later) to be submitted as a part of a "development plan" rather than on a piece-meal or single-well approach. Accordingly, the ERCB requires applications, including several or multi-wells as appropriate, for the following phases:
 1. **Pool Delineation (initial)** – The ERCB acknowledges that a definitive development plan is usually not possible at the outset. However, it is important that even with the first exploration well some outline of the conceptual developments be provided. This information, of course, cannot be very definitive but will be helpful in scoping out potential impacts and related issues. This stage of development could involve several wells, rather than separate single wells, and should address conceptual pipeline and production facility plans as well as details of measures proposed to minimize the impacts of drilling, production, and testing operations.

This phase should include baseline environmental information for the impacted area of the potential development. This information, referred to as an "environmental assessment", would be intended to assess specific sensitivities of a given area to evaluate whether or not development is indeed appropriate within that area.

2. Pool Delineation (subsequent) — Recognizing that further delineation needs may result from initial development (should this proceed), a subsequent delineation plan may be necessary. Should this be the case, the ERCB expects composite plans rather than single-well proposals and more definite plans for mitigation of impacts from drilling, production, and testing operations (e.g. pads, innovative testing methods). Elaboration of pipeline/facility proposals would be expected also. Delineation proposals are to include well locations and associated drilling and waste management aspects, access, and test/short-term production scenarios.
3. Pool Development — Upon delineation, a pool development plan encompassing all facilities, pipelines, and associated infrastructures would be expected. The overall objective would be to minimize the intrusion and to mitigate the impacts wherever possible.

The Board accepts that initial and subsequent delineation phases would typically provide only conceptual future plans which are subject to revision depending on drilling and testing results. Each phase is subject to a separate application and, if appropriate, public hearing process. It is therefore intended that the initial delineation phase establish whether development in the area is appropriate and, if so, what issues must be addressed in subsequent development phases. The application process for subsequent phases then provides for assurance that previously-defined issues are properly addressed, and also provides for review of new issues.

- Environmental Assessments — The oil and gas well developments currently proposed for the Eastern Slopes region are set out in Part 2, Division 1 of the AEP Environmental Protection and Enforcement Act (EPEA) as activities for which an environmental impact assessment is not required by AEP. Notwithstanding, the ERCB will require proponents to file quality environmental data to properly assess the overall benefit/cost of these proposals. Applicants will be requested to provide to the ERCB a thorough "environmental assessment" which includes, but is not limited to, the following information:
 - (a) an analysis of surface site and access road selection and construction procedures;
 - (b) an analysis of baseline environmental conditions and major areas of concern;
 - (c) a description and analysis of the significance of environmental, economic, and cultural impacts including regional, temporal, and cumulative effects;
 - (d) options and plans to mitigate these impacts, including reasons why they should or should not be implemented;
 - (e) plans to monitor predicted impacts and the success of mitigation measures;

- (f) emergency response plans and contingency plans to deal with unpredicted impacts;
- (g) description and results of initial public consultation programs and details of any future programs proposed; and
- (h) plans to minimize accidental substance release to the environment and to minimize waste.

The aforementioned represents areas that the ERCB believes necessary to assess the overall impacts of a proposed development. The ERCB believes, however, that the level of detail to which this information can or should be provided will vary depending on the phase of development being proposed. For example, requiring a full, comprehensive environmental assessment may not be reasonable or even necessary during the exploratory or "initial delineation" phases of a project.

It may still be necessary, however, to conduct sufficient environmental baseline analyses to determine what specific sensitivities exist and also to determine whether some form of development is appropriate within the project area. At the point where the potential for full-field development is more clearly defined, by comparison, comprehensive attention to the full-range of environmental assessment criteria may be warranted. It is also recognized that the environmental sensitivities of regions within the Eastern Slopes are variable, and it is reasonable to expect that the level of detail of the environmental assessment information be consistent with the sensitivity of the area proposed for development. That is to say that for areas of lower sensitivity, an overview assessment may suffice, compared to an area of high sensitivity where thorough treatment of all environmental assessment criteria would be appropriate. As a rule areas that have had little or no intrusions will be considered to be more sensitive.

In any event, the ERCB will expect the applicant to identify the sensitivity of the area and matters of potential impact early in this process and to discuss these with both government and the public to ensure the final application deals with all relevant issues, and in the appropriate level of detail to allow the Board to consider the applications.

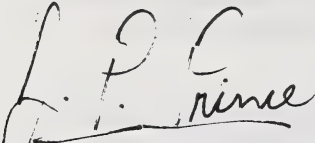
- Consolidated Plans Amongst Operators — Operators proposing developments within the Eastern Slopes area would be expected to consolidate efforts, to whatever degree possible, involving sharing seismic or reservoir/test data, pooling efforts and resources, and use of common roads, pipeline and utility right-of-ways, and general infrastructure with efforts aimed at minimizing surface impacts and disturbances.

The ERCB's objective in documenting these expectations is to ensure sufficient information is available to make informed decisions that are in the public interest. Given the level of public interest, the Board has assigned staff to assist with and aid in coordination of the process, particularly when discussing applications under the jurisdiction of the ERCB. Notwithstanding these resources, the ERCB reiterates that it relies on the proponents of the developments to take the lead role in identifying issues, contacting interested and affected parties, and resolving issues where possible.

Questions or concerns may be addressed to Mr. Nelson Lord at 297-8159 of the Board's Drilling and Production Department, or Mr. Roger Creasey at 297-3187 of the Board's Environment Protection Department.

A handwritten signature in dark ink, appearing to read 'F. J. Mink', with a stylized, flowing script.

F. J. Mink
Vice Chairman

A handwritten signature in dark ink, appearing to read 'L. P. Prince', with a stylized, flowing script.

L. P. Prince, Ph.D.
Vice Chairman

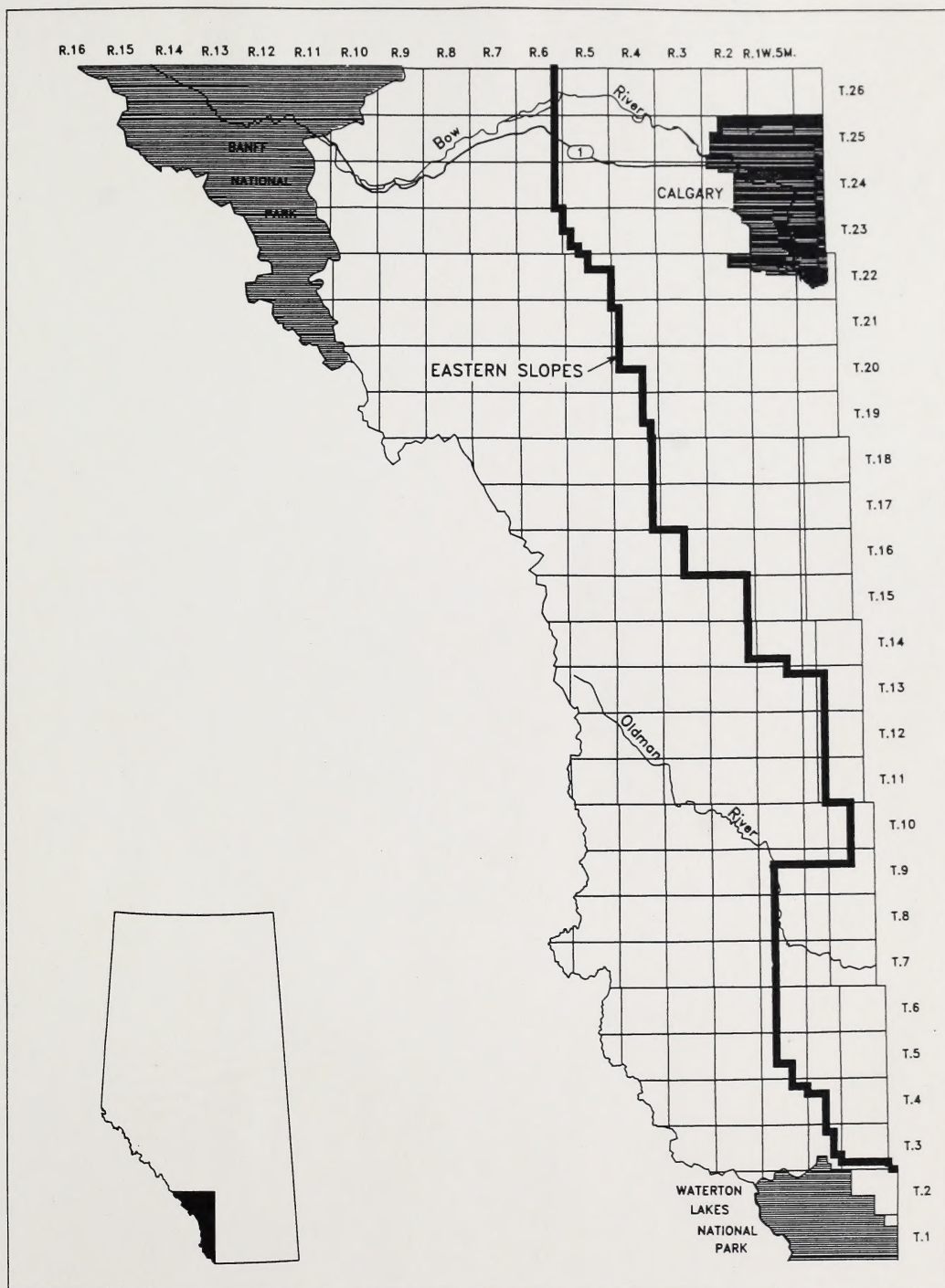


FIGURE 1 : EASTERN SLOPES SOUTHERN PORTION

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